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North Carolina DENTAL JOURNAL

WINTER-SPRING 1978
VOLUME 61, NO. 1

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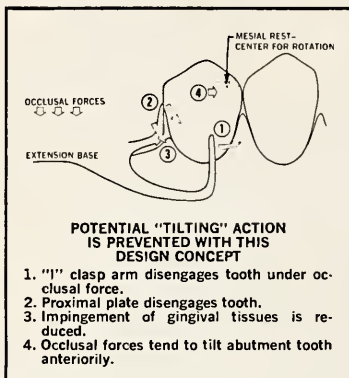
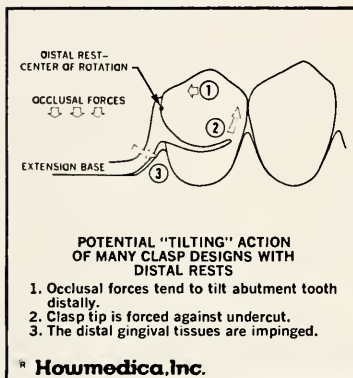
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ABOUT THE COVER

Dr. Robert Litton, Shelby, N.C. is currently president of the North Carolina Dental Society. He has served his profession, community and family well. Dr. Litton's profile appeared in the previous issue of the N.C.D. Journal.

North Carolina DENTAL JOURNAL

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WINTER-SPRING 1978

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EDITORIAL



A Prairie Code — If you're caught on the prairie in a storm and nobody's home — stay — eat what you need — check the animals — but when you leave be sure the woodbox is full.



“But — Whoever Made a Blade of Grass?”

At the end of the year one usually re-evaluates himself financially (not by choice) physically (by choice of his business, employer or physician) mentally by his conscience and religious belief and vocationally by his performance and contributions to society.

There are many criteria used for the evaluation, but the virtue or challenge of Humility could be the hardest to practice or achieve.

Humility could be described as the ability to maintain an honest inward standard of excellence without the outward expression of superiority.

In the case of higher education which includes the health sciences, Humility is the ability to accept assistance from others to obtain advanced knowledge and then to return the use of the knowledge with a humble attitude to those who have assisted.

A lifetime of mellowing passed between Franklin's first motto to: imitate Jesus and Socrates, and his eventual appreciation of his performance: “In reality there is perhaps none of our natural Passions so hard to subdue as Pride. Disguise it, struggle with it, beat it down, stifle it, mortify it as much as one pleases, it is still alive; and will every now and then peep out and show itself . . . For even if I could conceive that I had completely overcome it, I should probably be proud of my Humility.”

The practice of Humility begins at birth or the beginning of life when one is totally dependent upon someone and ends with the twilight of life when once again he becomes totally dependent upon someone. In the intermediate part of the spectrum of life when one is attempting to reach a plateau of success, respect and security, it is often easy to discard or disregard the virtue and forget that someone or something has made possible his success or failure.

The tremendous advancement in discovering how to utilize the elements of the earth and universe for the comfort of the created is awesome, and the potential of misuse of these

elements is even more awesome. Whether or not these advancements have made a happier, humbler and more tolerant world is questionable.

Probably the most humbling thoughts deal with the origin of ourselves and how the wonderful complex human organism can develop from two cells and be of different shapes, sizes and colors.

The continuing middle east crisis reminds me of a map that I was studying at the time of the Suez Canal crisis over 20 years ago. The threat of the use of nuclear weapons, the tremendous physical destruction and possible genetic effects experienced from the first atomic bomb caused me to reflect on the different peoples around the area. The region in and around the middle east is one of the greatest sand desert areas on the earth and many unearthed cultures.

In the immediate area we find a race of people with brown or tan skin; to the south a race of people with black skin; to the east a darker tan; further east, a yellow race; to the north and east a brown race; to the west an olive skin race; and to the far west and north the Nordic or a whiter race. We all can see differences in the color of skin and some physical difference in the races, but so far science has not identified the reason for the differences. The question could still be asked: Were all colors created or did they occur by genetic change?

Among the many inventions and innovations man has developed, probably the most significant would be the development of a written language which has enabled the tremendous technological, scientific and educational advancements we now know. With our present knowledge in our possession, however, are we directing these advancements for the proper purposes with the proper attitude and — “whoever made a blade of grass?”

GALEN W. QUINN, D.D.S., M.S.
Division of Orthodontics
Duke Univ. Medical Center
Durham, North Carolina 27710

LETTERS

to the Editor



Dr. Galen W. Quinn, Professor
Department of Surgery
Division of Orthodontics
Duke University Medical Center
Durham, North Carolina 27710

Dear Dr. Quinn:

Your letter of September 6, 1977 to Dr. Richard Fields was referred to me for a response to the question you have regarding our C&Y Program. We appreciate your interest in learning more about the activities of C&Y.

This program is designed to provide comprehensive health services to "Children and Youth" and is an extension of our Guilford County Health Department. We have a multidisciplinary staff of professionals and supporting employees whose functions range from preventive care to health maintenance for medically indigent children ages 0 through 17 years. The areas of specialties include, medical, nursing, dental, speech and hearing, nutrition, social work and psychology. Referrals are made to private practitioners when need for services are indicated and for services which our staff lacks preparation. There are 13,000 children presently enrolled in this comprehensive health care program.

Funds for C&Y services were made available under Title V of the Social Security Amendments in 1965. Our grant was approved in September of 1966 and funding has continued in the amount of \$776,000 annually. Additional monies of approximately \$100,000 are included locally to the total budget which of course does not reflect indirect costs. Disbursement funds have evolved from directly federal to state although the source is still federal.

We hope this information will be helpful to you and if there are additional questions please let me hear at any time. We are very proud to have Dr. Fields as a member of our Official Board. He has been and continues to be an active and a positive contributor to Public Health since his appointment in January 1964.

HOWARD S. GAILEY, Administrator
Guilford County Dept. of
Public Health
301 N. Eugene St., P.O. Box 3508
Greensboro, NC 27401

Dr. Galen W. Quinn
Editor
N.C. DENTAL JOURNAL
Duke Medical Center
Durham, N.C. 27706

Dear Dr. Quinn:

As you know, the University of N.C. School of Dentistry has been a leader in dental education regarding the use of natural teeth in our pre-clinical courses. We are now entering into a program where the natural tooth dentoforms will be produced one year ahead of time, and therefore we have need for more teeth now than in the past. We will appreciate a note in the North Carolina State Dental Society's Journal advising the dentists that we would appreciate their assistance in mailing extracted teeth to our School. Of course, you know that all they need to do is direct a postcard to Ms. Barbara Talbert at our School indicating their willingness to be a part of our program. Ms. Talbert then will mail the jar with its solution for the teeth along with a return mailing package. All we ask of the dentist is that he apply the

return postage to the package. When the package is received the dentist will be mailed another jar with its return mailer.

Our School is a leader in this aspect of our teaching program and the operative dentistry teachers that I have contacted in the past years covet very much the success of our program. One of the reasons why our program has been successful is because of the support of our friends in dentistry who are a part of our mailing program. We solicit more dentists to become a part of our natural tooth project.

DR. AL D. WILDER, JR. D.D.S.
Immediate Faculty Supervisor
of the Natural Tooth Project
UNC at Chapel Hill
School of Dentistry 209 H
Chapel Hill, N.C. 27514

January 8, 1978

Mr. Ray Hornak
North Carolina Dental Society
2414 Wycliff Rd.
Raleigh, NC 27607

Dear Ray:

As a result of the decision of the North Carolina Dental Society Executive Committee meeting held recently in Pinehurst, to issue the North Carolina Dental Journal only twice yearly, I would like you to do a cost comparison on the Journal for 1977 and estimates for 1978.

Contact our printer, Edwards & Broughton Company, Raleigh, for base prices for such a change, using an estimated size of approximately 72 pages, plus a separate cover.

(Continued on page 12)

PRESIDENT'S REPORT



Robert B. Litton, D.D.S.

In each article for the Journal I have mentioned the word "busy." Rightly so, because your North Carolina Dental Society Officers and Executive Committee are extremely busy but I feel we are making progress so our busy ways are productive.

I want to congratulate Dr. Barden on a very successful District Officers' Conference. The attendance was excellent, and I believe each person who attended took some good ideas home with him. The enthusiasm of those who attended was particularly impressive to me, and it is encouraging to see the interest that our leaders have because we all know we are in critical times — and certainly we must work together. A special thanks to Cliff Crandell for giving us the workshop on Parliamentary Procedure at the DOC. After hearing Cliff expound on the fundamentals of running a successful meeting, I am sure we can all take his advice and apply it immediately. Thanks again, Cliff.

We are still optimistic about getting all or part of Adult Dental Medicaid restored. The recent correspondence I have had from Governor Hunt and the recent telephone conversation with Dr. Sarah Morrow, Secretary of the Department of Human Resources, indicate an interest from the top officials. As you know, we appeared before the newly formed Medical Cost Containment Commission of the State Legislature. We were warmly received and a considerable amount of discussion ensued after I testified concerning dentistry and Medicaid. The subcommittee of this Commission that will work with dentistry is chaired by Representative J. P. Huskins, and he has assured me that he wants to work this out to restore part or all of Adult Dental Medicaid. There is no question in my mind that the Commission I have alluded to is very sincere about health care under Medicaid and I truly believe they will do as much as they can to help us.

Your Officers, Executive Committee, and Medicaid Liaison Committee are doing all they can to get Adult Dental Medicaid restored. We welcome suggestions from any of you pertaining to this and any other problem facing North

Carolina dentistry. Naturally we have received some criticism about how we are handling the Medicaid problem. But, without exception, I believe the criticism was from dentists who were not informed relative to what we were doing to have Adult Dental Medicaid restored. I am sure Governor Hunt and Dr. Morrow are tired of hearing the name of Litton and the North Carolina Dental Society. But I plan to continue to push for Medicaid reinstatement and improving the existing Medicaid program. I particularly am interested in having the screening program for children improved.

All reports indicate that the state committees are hard at work and I am sure we will see the fruits of their labor at the House of Delegates in April. Your Annual Sessions Committee has met to finalize the plans for the May meeting. Jim Eagle is chairing this committee and is doing an excellent job. His dedication for a successful state meeting is overwhelming. With the theme of "Back to Basics," program chairman Bill Current has an excellent program planned. Dr. Gordon J. Christensen from Provo, Utah, will bring us up-to-date on operative procedures and Dr. Charles W. Ellinger of the University of Kentucky will enlighten us on the latest prosthetic procedures. John Bottoms has superb table clinics lined up and, of course, we will have an array of commercial exhibits.

Our banquet this year will be dinner-dance style in the Cardinal Ballroom. Following dinner the Ronnie Kole Trio, of Kole's Corner on Conti Street in New Orleans, will entertain us and then they will play for our annual dance. I feel the change to a dinner-dance will be very satisfactory and eliminate the confusion of going from the dining room to the ballroom. Southern Living Magazine recently had a feature article on Ronnie Kole and listed his trio as one of the top entertainment groups in the French Quarter. Having heard this group several times, I assure you that you will have a most enjoyable evening. See you in Pinehurst, May 14-17.

ROBERT B. LITTON, D.D.S., President
Shelby, North Carolina

GUEST EDITORIAL



WHY "MOUTHLESS" MEDICAL SCHOOLS?

There was a time when the mouth, relatively speaking, was considered a scientific "no-man's land." That was when dental education fell between academic chairs — literally between the eyes, ears, nose and throat. In the United States dentistry was denied the academic status of other segments of higher education until 1867, when Harvard established the first dental school affiliated with a university-based faculty of medicine. Among today's 59 dental schools in this country, 21 private and 38 public, all but a few are affiliated with universities that also have medical schools.

Still, there is an additional but incompletely explored medical resource for potential contributions to oral-health research, teaching and service — namely, a total of 56 United States medical schools, 27 private and 29 public, which as yet are not associated with sister schools of dentistry. These 56 seemingly "mouthless" medical centers involve 31 states. In fact, seven states have several medical schools without affiliated dental schools: Illinois, Ohio, Texas and Virginia, three each; California and Pennsylvania, four each; and the State of New York, a total of seven, five private and two public.

To establish complete facilities and faculties for full-fledged dental schools can prove very costly. Within privately supported medical centers future funding of new dental schools now seems prohibitive. Even state support for such costly programs has become problematic. For example, there are currently no plans to develop dental schools in conjunction with the three relatively new publicly supported medical schools now in operation within the San Diego, Davis and Irvine campuses of the University of California. But this limitation does not have to mean that programs of dental interest need to be neglected within these or other medical schools, state or private.

Many medically oriented oral-health problems are awaiting more intimate joint exploration by physicians and dentists. Territories of common concern pertain to research as well as to teaching and patient care. For instance, over and beyond today's more biologically oriented dental journals (e.g., *Archives of Oral Biology*), it is noteworthy that organizations representing broad fields of science and biology —

such as the American Association for the Advancement of Science, the New York Academy of Science, and the Ciba Foundation, London — have, during the past decade or two, become the forum for many multidisciplinary symposium monographs dealing in depth with various biologic systems elucidating correlations between general and oral health and disease.

Modern dental practitioners, teachers and scientists alike, are evincing increased interest in the relations between oral and systemic diseases, and in the biology, pathology and treatment of oral soft tissues and their relations to the adjacent dental and osseous hard tissues. In other words, present knowledge of oral health goes far beyond the restoration and replacement of decayed and extracted teeth, with which dentistry originally was (and today's technical and clinical tests for United States Dental State Board Examinations still are) primarily concerned. A greater depth of dental research has resulted in an increased breadth of education, which now invites a broader scope of service.

It could stimulate further progress if more medical schools, their affiliated hospitals and university graduate schools became involved with problems of patient care, education and scholarly pursuits pertinent to oral biology and pathology. First of all, this development should include the basic sciences, from general biology to molecular biology, from anatomy through pathology, with all appropriate laboratories, from the dissecting room to the autopsy room, from electron microscope to radioisotope facilities — to name a few of many areas of research that may offer promise of a return in dentistry.

Ultimately of greatest service to the patients would be the more intimate association of dentists with colleagues in clinical medicine within the medical-school hospital framework. With this broader base, a variety of collaborative opportunities would be bound to develop — e.g., oral-health programs related to growth and development (pediatrics), metabolic diseases (internal medicine), mucocutaneous afflictions (dermatology), pain control (anesthesiology) and, more specifically, various nutritional, hormonal and

(Continued on page 9)

The Right Person, Place and Time

North Carolina Dental Placement Service Operational by Spring

One of dentistry's problems in North Carolina, as elsewhere, is the fact that dentists don't locate where they are most needed. Another problem is that of people finding jobs which satisfy them and employers finding the right people for the jobs. Such problems are being effectively dealt with in Minnesota by means of a computer matching program developed by Dr. David Born of The University of Minnesota, School of Dentistry.

A similar program is being established in North Carolina by a joint effort of the North Carolina Dental Society, the Dental Foundation of North Carolina, and the University of North Carolina at Chapel Hill. Dr. Charles Milone of the School of Dentistry and Dr. Gordon DeFries of the Health Services Research Center, both of the University of North Carolina at Chapel Hill, are developing the program with the assistance of an advisory committee of representatives from the North Carolina Dental Society, the Dental Foundation of North Carolina, the North Carolina Dental Hygienists

Association, the North Carolina Dental Assistants Association, the North Carolina Dental Laboratory Association and other interested groups. The computer program is being installed in the University of North Carolina computer system, and the North Carolina Dental Placement Service will be in operation in late spring, 1978.

The Service will provide a simple means for employers such as dentists, dental laboratory owners, institutions, and communities to find the right people for their positions. Of course, those persons seeking employment will also be provided a means of finding the positions which best meet their needs. For example, a dentist seeking to employ a dental hygienist would file his position and a short description with the Service. Likewise, a dental hygienist seeking employment will file her application and a short profile with the Service. After the dentist files his request, he will receive a list of all hygienists seeking employment in the geographic area of his practice and the profiles of each. The hygienist will also

receive a list of all positions in the geographic area which she has specified. Then by follow-up contact the dentist and the hygienist can learn more about each other, and if agreeable the dentist may hire the hygienist. In a similar manner a community seeking a dentist can make its needs known, and a similar process may occur. Files are kept current by a system of monthly purging.

The benefits of this Service seem so obvious as to require no elaboration. If all interested parties are using the system, it will be beneficial to each of them. Communities seeking a dentist will have a contact point through dentistry that will be helpful to them in locating a dentist. In order to ensure that all parties are aware of the system, an intense campaign of publicity to the dental profession, the auxiliaries, the training institutions and all other interested groups will be conducted in the next few months. When the program is ready, each dentist in North Carolina will receive details on how to use the Service.

Guest Editorial: "Why 'Mouthless' Medical Schools?"

(Continued from page 8)

hematologic disorders, infections, tumors, trauma and occupational diseases, forensic and geriatric problems affecting hard tissues as well as soft tissues, tissue fluids and secretions pertinent to the mouth, jaws and teeth.

The above conceptual scheme could offer supplementary academic and service opportunities for graduate and post-doctoral students of dentistry and medicine (fellows, interns and residents), as well as for regular medical students, to gain a better insight into newer aspects of the oral-health sciences and their relation to total patient care. Such associations could also facilitate programs for continuing education and help bring members of the dental and medical professions and their auxiliaries up to date on advances in stomatology in the setting of medical, hospital and university environments.

It seems to me that the time has come for American medi-

cal schools presently lacking dental-school affiliations to explore opportunities for establishing satellite stomatology divisions, in lieu of, and possibly as potential precursors for, complete "mouth" departments. Why should today's patients and students be deprived of advanced consultation and education in oral and dental health within modern medical schools, where holistic patient care, teaching and research are taken for granted for all other organ systems?

REIDAR F. SOGNAES, D.M.D., Ph.D.

University of California
Los Angeles, CA

Reprinted, by permission, from *The New England Journal of Medicine*, Vol. 297, Page 837-38, 1977.

Dr. Radar Sognaes was one of the first dentists to obtain a postdoctoral Ph.D. degree at the University of Rochester. Among other interests, he has been active in research, education and administration, and was formerly Dean, University of California Los Angeles. His remarks are timely with the Editorial in the Autumn, 1977 issue of the "North Carolina Dental Journal," "Curriculum in Crisis."

BOOK REVIEW

Dr. Norman F. Ross

Telescopic Prosthetic Therapy. By Irving L. Yalisove, D.D.S., F.I.C.D. and Joseph B. Dietz, Jr., D.D.S. (with eight multidisciplinary contributors). 1977. George F. Stickley Co., 210 W. Washington Square, Philadelphia, Pa. 19106. 352 pages, illustrated, indexed. Price \$48.50.

Drs. Yalisove and Dietz were pioneers in fixed and removable periodontal prosthesis, a field that has proven to offer fine alternatives to complete dentures for a rapidly growing number of patients. This excellent book will help dentists and patients preserve countless abutments and roots. As this concept grows in our profession, and an enlightened knowledge of the population, tremendous inroads will result in lowering the percentage of dental cripples and edentulous mouths.

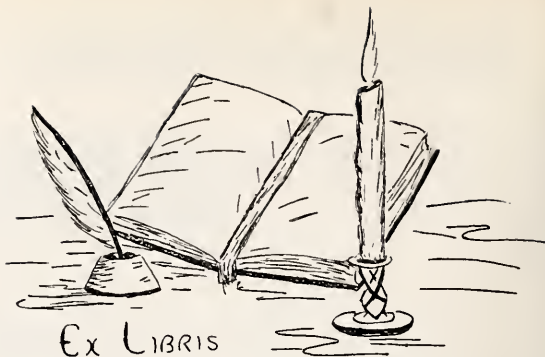
Visualize what a few retained roots or teeth of a reduced crown-root ratio, with the resulting maintenance of alveolar bone, proprioception, stability, retention and masticatory ability could have meant to so many of our "problem mouths." Think of the psychological effect for some patients that come to mind. Think of the numerous young arches that

were "slicked" for convenience and financial reasons, becoming so flattened and difficult to restore.

Financially, it is frustrating that relatively few patients feel they can afford sophisticated restorations, but if more dentists become convinced that the extra investment in the early stages will prove a saving in future cost, comfort, and function, many patients will respond when given the opportunity.

Alternative plans and excellent contributions from the periodontal, orthodontic, endodontic, laboratory technician, and other specialties add much to this beautifully illustrated well rounded work. It may result in thousands of happier dentists and millions of happier patients.

NORMAN F. ROSS, D.D.S.
Duke Medical Center
Durham, N.C. 27710



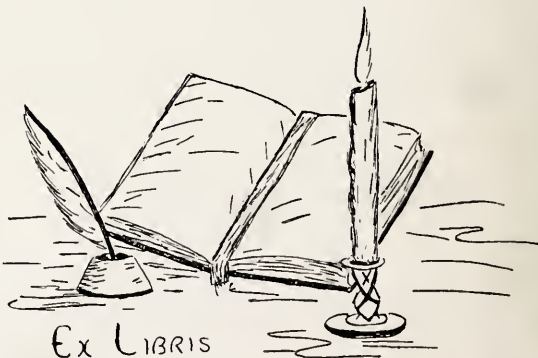
BOOK REVIEW

Dr. Galen W. Quinn

The Review of Gross Anatomy, Third Edition, by Ben Panlesy, Ph.D., M.D., and Earl House, Ph.D., 1975. McMillan Publishing Co., Inc., 866 Third Ave., New York, NY 10022. 508 Pages, illustrated, indexed.

On Page 128, Figs. 5a and b, there are radiographic illustrations labelled "Normal Skull." They should be labelled "Unhealthy Skull." The illustrations are apparently a reproduction of unoriented radiographs (x-rays). Even in poor reproduction, an experienced observer can detect asymmetry of the sinuses, a deformity of the septum with deviations to the right, enlargement of the turbinates, asymmetry of the hard palate (right side higher), asymmetry of the mandible in relationship to the maxilla with a deviation to the right, a unilateral crossbite of the dentition on the right side and a midline discrepancy of the mandible to the right approximately one-half to three-fourths of the width of a lower incisor.

GALEN W. QUINN, D.D.S.
Duke University Medical Center
Durham, NC 27710



PROFILE OF A PROFESSIONAL

Dr. Erbie Medlin with Lib Uzzell Griffin

"The good image and great tradition of dentistry in North Carolina, through our dental society, makes me very proud. The wonderful men that formed our organization and the fine traditions have continued, through the leadership of our members, up to this time. With the type of men coming along, I have no fear of the future of the NCDS.

I finished Wakelon High School at age 17 as salutatorian, but didn't know what I wanted to do. There were no vocational counselors in 1918. I was accepted at Wake Forest, but after talking with my friend, Victor Bell, was persuaded to accompany him to Richmond, Virginia. He was in his senior year at the Medical College of Virginia and convinced me that I might like dentistry.

Dr. L. M. Massey, of Zebulon, was my idol. I used his name so much my freshman year class members called me, "Dr. Massey."

We took four pre-dental subjects at Richmond College (now University of Richmond) plus seven dental subjects in my freshman year. I really began to like dentistry my sophomore year. The curriculum was extended from three to four years so there was no senior class when we entered our sophomore year. With patients pouring into the infirmary, we green sophomores were required to perform clinical duties. I enjoyed the practical side of dentistry. I was a Xi Psi Phi member and president of the senior class.

After graduation in 1922, I interned at State Hospital and School for the Deaf in Morganton. In 1923 I attended a joint meeting of the Virginia and North Carolina Dental Societies in Pinehurst. While there, I purchased the equipment and practice of the late Tyler Campbell of Aberdeen and practiced there for 47 years and retired in 1970.

You have heard of a "building preacher?" I was a "building dentist." I was actively involved in building; first dental bungalow office in state — (downtown Aberdeen); dental office (1962 Highway 1, toward Southern Pines); Town Hall; Savings & Loan; Church; Health Center (Carthage);



home (Country Club of N.C.).

I agree completely with our able president, Robert Litton, dentists should be active in community affairs. I have been an active member of: Sandhills Kiwanis Club for 54 years, (President in 1934); Mayor of Aberdeen eight years and on the Town Council (22 years.) (As mayor, my accomplishments were fluoridating Aberdeen's water supply and constructing a new Town Hall); Director Moore Memorial Hospital 27 years, and president (two terms); Dental member of Moore County Board of Health 35 years (retired as vice-chairman, Jan. 1, 1978); Past president of the Moore County Educational Foundation; Director of First Security Savings & Loan Association 47 years, (23 as president, retired Jan. 1, 1978); Deacon Emeritus of First Baptist Church, Aberdeen, taught Dr. Medlin Bible Class for 32 years.

In 1968 I was honored to receive the Builder's Cup (the most prestigious award given in Moore County); Jaycees Community Service Award in 1977; County Resolution by the Moore County Commissioners for serving longer than any member since the Board was created (Jan. 1, 1978.)

Keeping up professionally has been my lifelong goal. I believe in updating equipment, exchanging ideas with my associates, attending meetings and clinics. I took a P.G. course in Dental Radiography in 1930, Medical Division, Eastman Kodak Co., Rochester; Orthodontics under Dr. Pollock, St. Louis, 1935; periodontics, Chapel Hill, 1962.

Abroad, I have attended: F.D.I. meeting in Paris, Rome, Dublin. Tel-

Aviv, Sydney; Pacific Dental Congress, Honolulu; two NCDS sponsored seminars, Carribean Islands and Spain.

For many years after 1923, I was the general chairman of arrangements for the state meetings at Pinehurst. I began my office holdings as Editor, Third District Bulletin, "The Plugger" President, Third District, 1934; Vice-President, North Carolina Dental Society, 1939; Secretary, State, 1941-1944 (\$300 allowance, and secretaries did most everything); Pres.-Elect, N.C.D.S., two years (as there was not a state meeting in 1945 but still made the district meetings). President, N.C.D.S. 1946-47.

During my year as president, a survey showed the need for a dental school in North Carolina so the program goal was built around dental education. When I stepped down from the chair, I received my most treasured compliment. The late Dr. J. Martin Fleming said, "I have been a member and attended most meetings since 1893, when I got my license. In all that time I have never seen a presiding officer who was superior to Dr. Medlin and have seen very few his equal or who made the success of the work that he has. A long time ago I served. When I went down from the chair, old Dr. Dabney of Newton came to me, shook my hand and said, "Fleming, now is the time to congratulate you. The time is not when you take up the work but when you lay it down. I now want to congratulate Dr. Medlin for the fine work he has done." This compliment means even more because I had no idea that the old gentleman even liked me!

It is nice to receive congratulations when you lay your work down. I've had my share: F.A.C.D., 1959 (New York meeting); member of State Board of Dental Examiners, 1950-1956, president two years; Delegate from NCDS to ADA, 12 years, three years as chairman (presented silver tray, 1973, in appreciation, on behalf of the NC Delegates).

(Continued on page 43)

Letters to the Editor

(Continued from page 6)

I would like to have these figures as quickly as possible.

GALEN W. QUINN, D.D.S., M.S.
Professor of Orthodontics
Duke University Medical Center
Editor, N.C. Dental Journal

The base price shall include 72 pages, 8½ x 11 page size, black ink inside on 70 lb. enamel, 70 square inches of type, photographic or advertising material per page; plus separate cover, 4 colors of ink on cover 1 & 4, one color inside, on 100 lb. enamel; and saddle stitching.

	2,000	Per M Extra
1. Base price	\$4,440	\$468
2. Four extra pages inside	226	18
3. Eight extra pages inside	453	37

4. Sixteen extra pages inside	906	74
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6. Each additional color of ink		85
7. Repeat same color in 8 page form, per page		7
8. Art Department:		
a. Basic layout, per hour\$	22	
b. Color separation negatives		210
9. Deduct if covers are printed in one color only	-264	
10. Deduct if 60 lb. enamel is used inside	-110	

T. L. MANESS

January 11, 1978

Dr. Galen W. Quinn
Department of Surgery
Division of Orthodontics
Duke University Medical Center
Durham, NC 27710

Dear Dr. Quinn,

Enclosed, please find a copy of a cost comparison of the North Carolina Dental Journal, based on actual 1977 figures and projected 1978 figures, as per your request.

The 1977 figures are self-explanatory, however, 1978 projections may require a bit of explanation. Publication costs for two 1978 NCDJ issues are based on a flat fee of \$4,440.00 for 72 pages, with each additional eight page section at a cost of \$453.00. The estimated \$75.00 increase in mailing costs, from \$175.00 to \$250.00, includes an additional charge for a heavier piece. The advertising revenue of \$2,340.00 is simply a 20% addition to what seems to be our standard advertising revenue of \$1,940.00 for the final three issues of 1977.

The 1978 figures assume no changes in the style or format of the Journal and are based on the same weight of paper and four-color cover.

If you have any questions on this comparison, please contact me.

RAYMOND J. HORNAK
Assistant Executive Director

January 12, 1978

Agreement

Edwards & Broughton Company hereby agrees to publish the next two issues of The Dental Journal by offset lithography at the following prices, except for mill changes in paper stock prices.

NORTH CAROLINA DENTAL JOURNAL COST COMPARISON

1977—ACTUAL, 4 Issues

WINTER:	\$2,829.51	(48 Pages)
	+ \$ 175.00	(Mailing Costs)
	<u>\$3,004.51</u>	Total Cost (Publication & Mail)
	— \$2,010.00	(Advertising Revenue)
	<u>\$ 994.00</u>	Amn't Subsidized by NCDS
SPRING:	\$4,245.42	(68 Pages)
	+ \$ 175.00	(Mailing Costs)
	<u>\$4,420.42</u>	Total Cost
	— \$1,940.00	(Advertising Revenue)
	<u>\$2,480.42</u>	Amn't Subsidized by NCDS
SUMMER:	\$4,322.21	(64 Pages)
	+ \$ 175.00	(Mailing Costs)
	<u>\$4,497.21</u>	Total Cost
	— \$1,940.00	(Advertising Revenue)
	<u>\$2,557.21</u>	Amn't Subsidized by NCDS
AUTUMN:	\$2,864.63	(44 Pages)
	+ \$ 175.00	(Mailing Costs)
	<u>\$3,039.63</u>	Total Cost
	— \$1,940.00	(Advertising Revenue)
	<u>\$1,099.63</u>	Amn't Subsidized by NCDS

GRAND TOTAL COST (1977):	\$14,961.77
GRAND TOTAL ADVERTISING REVENUE:	\$ 7,830.00
TOTAL AMOUNT SUBSIDIZED BY NCDS:	\$ 7,131.77

1978—PROJECTED, 2 Issues, 20% Ad. Increase

	72 Pgs.	80 Pgs.	88 Pgs.	96 Pgs.
WINTER/SPRING:	\$4,440.00	\$4,893.00	\$5,346.00	\$5,799.00
	+ \$ 250.00	\$ 250.00	\$ 250.00	\$ 250.00
(Total Cost)	\$4,690.00	\$5,143.00	\$5,596.00	\$6,049.00
(Adver. Rev.)	— \$2,340.00	\$2,340.00	\$2,340.00	\$2,340.00
(Amn't Subsidized by NCDS)	\$2,350.00	\$2,803.00	\$3,256.00	\$3,709.00
SUMMER/AUTUMN:	(SAME AS ABOVE)			

GRAND TOTAL COST (1978):	\$9,380.00	\$10,286.00	\$11,192.00	\$12,098.00
GRAND TOTAL ADVERTISING REVENUE:	\$4,680.00	\$ 4,680.00	\$ 4,680.00	\$ 4,680.00
TOTAL AMOUNT SUBSIDIZED BY NCDS:	\$4,700.00	\$ 5,606.00	\$ 6,512.00	\$ 7,418.00

SPECIAL EDITORIAL

Words of wit and wisdom
for any and all occasions . . .

THE CROSSROADS AHEAD

Distinguished Guests, reverend clergy, ladies and gentlemen, my colleagues and my friends. It is an honor and a privilege to address you on this occasion today. First I would like to congratulate each one of you assembled here on the attainment of the objectives for which you have worked so hard. A very strange thing happened to me tonight on my way to this function, which reminds me at this point of a story about this great nation of ours. The disturbing feature of all this, is despite all the bitter lessons, we of course know better.

As that great statesman once said, I need hardly remind this intelligent audience without fear of successful contradiction that we hand down to posterity as a matter of policy a few words about your splendid hospitality and this great nation of ours. We view with alarm under our present wise leadership and some may be surprised, for above and beyond we begin to see the sun break through. We are counting on your help because, as you so well know, it must be forthcoming to our way of life.

As we travel the long road ahead down to the grass roots of America, there are those extremists whose voices cry out in the night. In this worthy cause we must not forsake, but rather, with wisdom, recall that there are those who say that tomorrow may

be too late. Make no mistake, in our over all approach no one will dispute this fact, and it is a sobering thought. It is perhaps more than coincidence, and honesty demands, whether we desire it or not, that we face up to the issue. As we must always endeavor to point out, this observation has led me to one conclusion.

Keeping always abreast of the times, the record shows that we are a young nation. It is gratifying to hear, like all good Americans — and these are simple hard facts. We have no illusions. This is no dream, but a challenge. History teaches us that the period of greatest crisis and most glorious future lies before us, and especially disillusioning has been our experience in this worthy cause. Yet, we must not falter!

Where shall we turn? In our judgment, we do not wish to confuse the issue. The primary aim has always been to understand the problem better. I do not pretend to know the answers. There are unmistakable signs, I submit to you, and in such view we are perhaps more to be applauded than condemned as the world may one day see.

This brings me to my second point — another and wiser man has said it far better — for therein lies the common denominator of a people who will never give up. We should, then, pause and reflect. It is said that money is the

root of all evil, but it was gratifying to hear, in our overall approach, and as a matter of fact, it is this very spirit of unselfishness which is beyond peradventure of doubt. Whoever would challenge those words of our reverend founding fathers. I say to you, let's look at the record.

Of this we can be assured — as those who have gone before us — and those splendid men and women in this room whose very presence tonight testifies. With heartfelt thanks, and with unyielding determination as in the immortal words first uttered by my illustrious colleague, we hear the hallowed voices — Blue and Gray — who made it the great common heritage of the melting pot, sealed with blood in the spirit of the dauntless pioneers and in this tradition we must and we will — under God.

It has been a distinct honor and privilege, and in conclusion let me say that words cannot express. On that note may I leave you with this parting thought, which I know will be taken in the spirit in which it is offered, for the die is cast before the bar of justice and world opinion. Sic transit glorious Monday — and with this truism as your beacon, return to your homes with renewed determination that this nation, or any other nation, shall not, cannot and will not — with due humility and glory.

TENTATIVE SCHEDULE
122nd Annual Session
North Carolina Dental Society
May 14-17, 1978
Pinehurst Hotel, Pinehurst, N.C.

"BACK TO BASICS"

Sunday, May 14, 1978

- 8:30 a.m. — Golf Tournament
- 11:30 a.m. — Registration Desk Opens
- 1:30 p.m. — American College of Dentists Luncheon, Crystal Room
- 5:30 p.m.-6:30 p.m. — Social Hour Honoring Dental Auxiliary, Poolside
- 6:30 p.m. — Dinner, Main Dining Room
- 8:30 p.m. — First General Session, Cardinal Ballroom

Monday, May 15, 1978

- 7:30 a.m. — District Officers' Conference Breakfast, Crystal Room
- 9:00 a.m. — Opening Ceremony, Cardinal Ballroom
- 10:00 a.m.-12:00 noon — Scientific Session — Dr. Gordon J. Christensen, Cardinal Ballroom
- 12:00 noon — International College of Dentists Luncheon, Crystal Room
- 2:00 p.m.-5:00 p.m. — Scientific Session — Dr. Gordon J. Christensen, Cardinal Ballroom
- 2:00 p.m. — Delta Dental Plan of N.C. Board of Directors, Carolina Board Room
- 5:00 p.m. — NCDPAC Board of Directors, and Membership, Carolina Board Room



Dr. James C. Eagle, Jr.
Chairman, Annual Sessions Committee

**Preliminary
Program
122nd
Annual
Session**

**North Carolina
Dental Society**

May 14-17, 1978
Pinehurst Hotel
Pinehurst, N.C.



- 5:30 p.m. — Fraternity Social Hours
- 6:30 p.m. — Dinner, Main Dining Room
- 8:30 p.m. — Second General Session, Cardinal Ballroom

Tuesday, May 16, 1978

- 7:30 a.m. — Past Presidents' Breakfast, Crystal Room
- 7:30 a.m. — Spurgeon Presidents' Breakfast, Main Dining Room, East Wing
- 9:00 a.m.-11:00 a.m. — Scientific Session — Dr. Charles W. Ellinger, Cardinal Ballroom
- 11:00 a.m. — Visit Your Commercial Exhibits
- 12:00 noon — Academy of General Dentistry Luncheon, Crystal Room
- 12:00 noon — Pierre Fauchard Academy Luncheon, Main Dining Room, West Wing
- 2:00 p.m.-5:00 p.m. — Scientific Session — Dr. Charles W. Ellinger, Cardinal Ballroom
- 5:30 p.m.-6:30 p.m. — Reception for All Members, honoring New Members and Guests, Poolside
- 7:00 p.m. — Annual Banquet, Cardinal Ballroom
- 9:00 p.m. — Entertainment and Dance, Cardinal Ballroom

Wednesday, May 17, 1978

- 9:00 a.m. — Projected Table Clinics, Cardinal Ballroom
- 11:00 a.m. — Third General Session, Cardinal Ballroom



Dr. Robert W. Wilson,
Chairman, Arrangements Committee



Dr. Gordon J. Christensen

Dr. Christensen is the founder and co-director of Clinical Research Associates. This organization is comprised of study clubs, private practitioners, and academic dentists. Its primary purpose is the evaluation of new materials and devices. A monthly publication of CRA findings is sent to the profession.

Dr. Christensen is also engaged in private practice in Provo, Utah and participates annually on the post-graduate faculties of many dental schools. Over the past fifteen years, he has been on the full-time faculties of three major universities, served as a Department Chairman in two schools, and as an Associate Dean and Full Professor.

Dr. Christensen's degrees include: DDS, University of Southern California; MSD, University of Washington; and PhD University of Denver. He is a diplomate of the American Board of Prosthodontics and a Fellow in the American College and the International College of Dentists, and the American College of Prosthodontists. His memberships include: American Academy of Restorative Dentistry, American Academy of Crown and Bridge Prosthodontics, International Association of Dental Research, American Academy of Esthetic Dentistry, Academy of Operative Dentistry and the ADA Council on Dental Materials and Devices.

He has authored approximately 100 articles and participated in the writing of several books. He lectures annually throughout the United States and in other countries.

Dr. Christensen will lecture on Monday, May 15, 1977.

Scientific Sessions

Monday, May 15, 1978

Tuesday, May 16, 1978

Cardinal Ballroom

Pinehurst Hotel

Pinehurst, NC

Tuesday's scientific session, May 16, 1978, will be provided by Dr. Charles W. Ellinger, Professor and Chairman of Prosthodontics at the University of Kentucky, Lexington.

A graduate of The Ohio State University College of Dentistry, Dr. Ellinger also received his M.Sc. degree from that same university. Following a two year assignment with the United States Army, Department of Prosthodontics, he entered private practice in Lima, Ohio for three years.

Dr. Ellinger has been associated with the University of Kentucky College of Dentistry since 1965, as Instructor, Assistant, Associate and Full Professor, until accepting the Chairmanship of the Department of Prosthodontics in 1973.



Dr. Charles W. Ellinger

A Diplomate of the American Board of Prosthodontics and a past president of the Academy of Plastics Research, Dr. Ellinger received the Schweitzer Award for Research from the Greater New York Academy of Prosthodontics in 1975. A member of numerous professional organizations, including the International Association for Dental Research and the Federation of Prosthodontics Organizations, he has served as President of the Carl O. Boucher Prosthodontic Society and on many dental college, university and hospital boards and committees at the University of Kentucky.

An international lecturer, Dr. Ellinger has spoken throughout the United States and most recently at the 1977 Mexico International Dental Association.

In addition to scientific articles in national and international journals, Dr. Ellinger has co-authored one book and has been a contributing editor in another.

Dr. Ellinger's topic at the 122nd Annual Session of the North Carolina Dental Society will be "Minimizing Problems in Removable Prosthodontics." A synopsis of his presentation follows:

The success or failure of a complete denture or removable partial denture is often dependent on one or several minimal problems that can be overlooked by busy practitioners. Practical methods of solving or avoiding these potential problems will be presented. The problems encountered in diagnosis, treatment planning, impression making, jaw relations, selection and arrangement of teeth, and adjustment will be included.



Dr. William A. Current
Chairman, Programs Sub-Committee

BACK TO BASICS IN COMMERCIAL EXHIBITS

Monday, May 15, 9:00 a.m.-5:00 p.m.

Tuesday, May 16, 9:00 a.m.-5:00 p.m.

North, South & Dogwood Rooms, Corridor off Main Lobby & Cardinal Ballroom

You are urged to visit the commercial exhibits. The manufacturers, dealers, laboratories and other organizations will be represented by highly qualified people who can give you helpful hints on economical and intelligent buying.

Firm Name	Booth	Firm Name	Booth
A-Dec, Inc., Newberg, Oregon	(See Healthco)	Pacemaker Corporation, Portland, Oregon	52
American Dental Manufacturing Company, Missoula, Montana	23	Patterson Dental Company, Raleigh, North Carolina	53 & 54
Andrews' Professional Products, Mocksville, North Carolina	Porch	Pelton & Crane Company, Charlotte, North Carolina	65, 66 & 67
A-V Scientific Aids, Inc., Los Angeles, California	43	Philips Medical Systems, Stamford, Connecticut	61
Block Drug Company, Inc., Jersey City, New Jersey	78	Pollard, Vic Dental Specialities and Supplies, Westlake Village, California	49
Bosworth Company, Harry J, Chicago, Illinois	41	Precision Sales & Service, Trinity, North Carolina	19 & 20
Butler Company, The John O., Chicago, Illinois	13	Premier Dental Products Company, Norristown, Pennsylvania	50
Carolina Dental Supply, La Grange, North Carolina	60	Procter & Gamble Distributing Company, Cincinnati, Ohio	40
Charlotte Laboratory, Inc., Charlotte, North Carolina	11	Professional Budget Plan, Madison, Wisconsin	12
Chayes Virginia Corporation, Evansville, Indiana	55 & 56	Ransom & Randolph Company, Toledo, Ohio	68
Chemetron Dental Products, Westlake Village, California	75 & 76	Ritter Company, Rochester, New York	25
Codesco, Inc., Asheville, North Carolina	51	Rudd, Clyde & Associates, Inc., Raleigh, North Carolina	21
Coe Laboratories, Inc., Chicago, Illinois	63 & 64	Saunders Company, W. B., Philadelphia, Pennsylvania	5
Columbus Dental Company, Columbus, Ohio	18 A&B	Siemen's Corporation, Iselin, New Jersey	59
Crumpton, Inc., J. L. & J. Slade, Durham, North Carolina	74	Southern National Leasing, Charlotte, North Carolina	22
Den-Tal-Ez Manufacturing Company, Des Moines, Iowa	47 & 48	Starr Dental Manufacturing Company, Charlotte, North Carolina	9
Dentsply International, Inc., York, Pennsylvania	37, 38 & 39	Sturgis, J. Minor Porcelain Laboratory, Atlanta, Georgia	10
Ellman Dental Manufacturing Company, Inc., Hewlett, New York	15	Teledyne Water Pik, Ft. Collins, Colorado	3
Healthco, Inc., Charlotte, North Carolina	69, 70, 71, 72 & 73	Teledyne Dental, Denver, Colorado	44
Hoyt Laboratories, Neidham, Massachusetts	45	Thompson Dental Company, Greensboro, North Carolina	26, 27, 28, 29 & 30
Hu-Friedy Manufacturing Company, Chicago, Illinois	24	Tincher Dental Laboratories, Inc., Charleston, West Virginia	6
Ives Laboratories, Inc., New York, New York	57	Unitek Corporation, Monrovia, California	8
Janar Company, Inc., Grand Rapids, Michigan	34	Vacudent Sales Corporation, Salt Lake City, Utah	36
Johnson & Johnson, Atlanta, Georgia	42	Van R. Dental Products, Inc., Los Angeles, California	16
Kerr Manufacturing Company, Romulus, Michigan	46	White, S. S., Division of Pennwalt, Philadelphia, Pennsylvania	31, 32 & 33
Lilly, Eli & Company, Indianapolis, Indiana	14	Woodard Prosthetics Laboratory, Greensboro, North Carolina	1 & 2
Medidenta Corporation, Woodside, New York	4	Young Dental Manufacturing Company, Maryland Heights, Missouri	58
Merrell-National Laboratories, Cincinnati, Ohio	77		
Midwest American, Des Plaines, Illinois	17 & 18		
National Dental Supply Company, Arlington, Pennsylvania	7		
Oral-B Company, Division of Cooper Laboratories, Inc., Parsippany, New Jersey	62		
Oral Health Products, Inc., Tulsa, Oklahoma	35		



Dental Research Center, UNC-CH

Current Status of Composite Resins

Karl F. Leinfelder, D.D.S., M.S.
Duane F. Taylor, Ph.D.

*First in a series of articles from the
Dental Research Center, UNC-Chapel Hill*

As the first topic in this continuing series we will discuss the current status of composite resins. Since this topic is so extensive in scope it will be necessary to devote more than one article to the subject. This first part attempts to discuss some of the physical properties of composites. The next portion will discuss the clinical performance of composites after five years of service.

There are today more composites on the market than ever before. At the latest count there are no less than sixty different brands for the dentist to choose from. Of these, however, only five have been commercially available for five years or longer. The rest of them are relatively new. With the ever increasing improvement in composites, the trend towards introducing many new products within a short period of time is likely to continue.

A representative sample of composites commonly used in many dental practices is given in the following table. Also indicated are the representative dental manufacturers as well as the form in which the composites are supplied. All of them are chemically polymerized except Nuva-Fil whose polymerization is initiated by ultra-violet light.

COMPOSITE	MANUFACTURER	SYSTEM TYPE
Adaptic	J & J	Paste—Paste
Compodent II	Teledyne	Paste—Paste
Concise	3 M	Paste—Paste
Epoxydent	Lee Pharmaceutical	Paste—Paste
Exact	SS White	Paste—Paste
HL-72	Lee Pharmaceutical	Powder—Liquid
HL-72	Lee Pharmaceutical	Paste—Paste
Nuva-Fil	L. D. Caulk	Paste—Liquid
Portrait	Lorvic	Paste—Paste
Powderlite	SS White	Powder—Liquid
Precedent	Den-Mat	Paste—Paste
Restodent	Lee Pharmaceutical	Powder—Liquid
Simulate	Kerr	Paste—Paste
Vytol	Caulk	Paste—Paste

Nearly all the composites listed in the table are currently under evaluation at the Dental Research Center. While most of the various restorations under study were placed during the last year, a number of them have been

under continuous observation for almost 6 years.

As can be seen from the table, nearly all the composites are supplied in the paste—paste form. This type of system which was first introduced by Johnson and Johnson (Adaptic) over ten years ago, has proved to be a rather simple and convenient method for dispensing, mixing and inserting the restorative material. Although the two paste system is most commonly used in the dental office, the powder—liquid (HL-72, Restodent and Powderlite) offers some distinct advantages. First of all, this system generally does not require refrigeration as is recommended for most paste—paste systems. Failure to store the latter at low temperatures commonly results in reduced shelf-life. As the material ages the setting time becomes unpredictable and eventually the material will not harden. Secondly, under normal circumstances, the average shelf-life of the powder—liquid is considerably longer than its paste—paste counterpart, particularly if the liquid has not yet been activated. Another advantage of the powder—liquid system is that the fluidity of the pre-set composite can be controlled by adjusting the powder—liquid ratio. Such manipulative freedom permits the operator to use a low viscosity mix as a thin initial layer to insure penetration into acid etched enamel.

All of these composites are available in a universal shade. As a rule this shade ideally matches the surrounding tooth structure in about 80% of the teeth in which it is placed. In an effort to improve the color matching characteristics most manufacturers of composite resins offer three or four shades in addition to the universal shade. Appropriate shade selection, depending upon the particular composite used, will raise the ideal color matching ability to between 90 and 95%.

Due to the competitive nature of the composite resins market most products are similar in many ways. For example, the silicious filler used in most composites are comparable in size, shape and concentration. While the filler particles are generally irregular in shape, as seen in Figure 1a, a limited number of products contain spherical particles as well (Figure 1b and 1c). The first dental composite (Addent 35—3 M Company) contained



Figure 1a. scanning electron photomicrograph of the filler particles in Nuva-Fil, original magnification 400x.

high concentrations of spherical particles. Because of their relatively high population density and possible lack of coupling agents these particles continuously fell out leaving small cavities on the surface, which in turn contributed to a faster than normal rate of discoloration. The irregularly shaped particle has subsequently become the choice of most manufacturers.

New Developments in Composite Resins

Recently a number of new types of composite resins have been introduced



Figure 1b. scanning electron photomicrograph of the filler particles in Compodent, original magnification 200x.

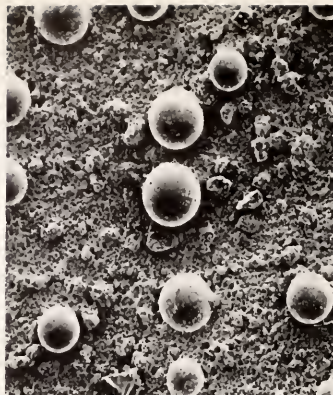


Figure 1c. scanning electron photomicrograph of the filler particles in Prestige, original magnification 165x.

to the dental profession in Europe. One of these is a photopolymerized composite which is substantially improved over the one currently in use, Nuva-Fil. A photograph of this material (Uvio Fil—ESPE) and the unit used to photopolymerize it (Uviolite) is illustrated in Figure 2. There are a number of basic differences between this system and the Nuva-Fil, Nuva-Lite system. The ultra-violet light is transmitted to the restoration through a handpiece rather than by a pistol-shaped device containing the light source. The handpiece is connected to the ultra-violet light source by means of a flexible light transmitting cord. Such an arrangement permits greater flexibility for getting the UV light to the restoration. The unit is so designed that the light will automatically turn off after 20 seconds or other time interval preselected by the operator. A foot control is also provided so that the light can be controlled manually. At the end of the light-transmitting period the light drops down considerably in intensity rather than remaining at high levels. Such a design may add considerable longevity to the light source. The time required for polymerizing the composite has been reduced to 20 seconds. This represents one-third of the time normally required to assure polymerization with Nuva-Fil. The composite used with this system is a paste containing small irregularly-shaped silicious particles. The filler content, however, has been reduced to allow greater penetration of the ultra-violet light. This composite can be polymerized to a depth of at least 2.0 millimeters. It requires no precatalyz-

ing or refrigeration and has a considerably longer shelf-life than most composites on the market today.

The composite resin is contained in cylindrical tubes, which are stored in a rack between uses (See Figure 2). The amount needed for any particular restoration is ejected by means of a screw-type plunger.

Although this improved system is rapidly growing in popularity in Europe where it was first introduced, a number of problems still remain. First of all, many clinicians prefer conventional auto-cured composites for Class III cavity preparations. The design of such preparations may prevent the ultraviolet rays from reaching all por-

tions of the composite. Consequently some internal portions may remain unpolymerized. Secondly, the technique for using photo-curing composites in Class III cavity preparations is somewhat more difficult as compared to using conventional composites. In some situations, for example, the operator may find it inconvenient to hold the matrix strip and simultaneously position the light source.

Another esthetic restorative system recently introduced to the European dental market is a polishable composite (Isopast, Vivadent). This system, which consists of a base and a catalyst, is dispensed in paste form from two syringes and mixed on a treated paper pad in a conventional manner. Supposedly, both the matrix and the filler are of organic origins so that the surface can be polished with a silicone-rubber point or wheel. While the manufacturer claims Isopast can be used for III, IV and V cavity preparations, as well as class I and II when esthetics is of prime concern, such claims are not yet verified.

These composites as well as a number of other systems are currently being evaluated in both the laboratory and clinic in the Dental Research Center for the purpose of ascertaining their usefulness as improved restorative materials.

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Figure 2. photograph of new UV polymerized composite (Uvio Fil) and Uv polymerizing light source (Uviolite).

A MONOGRAPH ON HEMATOLOGY

PART I

DISORDERS OF RED BLOOD CELLS

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INTRODUCTION

Oral manifestations of blood dyscrasias are not uncommon and often can be seen during the early phase of a disease. The oral cavity can mirror anemia, leukemia and many coagulation disorders. Gingival bleeding, hyperplastic gingiva or pale mucous membranes may be forewarning of a serious hematologic disorder.

Dentists are concerned and aware that they may have the first opportunity to examine such patients and detect the obvious or subtle clues of underlying disease. It is the purpose of this monograph to classify succinctly yet comprehensively the hematologic disorders and place special emphasis on their oral manifestations. It will also provide a quick and easy reference for laboratory procedures used in making a definitive diagnosis.

The Monograph is presented in three parts; Part I: Disorders of Red Blood Cells, Part II: Disorders of White Blood Cells and Part III: Bleeding Disorders.

THE BLOOD

Blood, estimated as 7 percent of the body weight, consists of a fluid portion, the plasma, in which are suspended the formed elements: red cells, white cells and platelets. Also circulating in the plasma are the proteins, albumin, globulin, prothrombin and fibrinogen. Other solids in the plasma include sodium, calcium, potassium, magnesium, phosphorus, the nonprotein nitrogen group, neutral fats, phospholipids, glucose, cholesterol, oxygen and carbon dioxide. The plasma also contains antibodies, complement, hormones and enzymes. The cellular elements constitute 47 percent of the total blood volume in males and 42 percent in females.

After birth, it is generally conceded that the bone marrow is normally the origin of stem cells which develop into red cells, granulocytes and platelets. These formed elements all derive from a common origin: a cell with the potential to evolve into any of the cell lines. Lymphocytes develop from this common stem cell in the marrow; however, other sources of lymphocytes may include lymph glands, spleen, the thymus gland and tonsils. Monocytes probably also develop from the multipotential stem cells of the bone marrow.

Extramedullary hematopoietic sites may develop in certain diseases and these blood-forming foci may produce and over-produce one or all three types of cells.

The major function of the red blood cells is to transport and transfer oxygen from the lungs to tissues and return carbon dioxide to the lungs. Unique characteristics of the red cell and the hemoglobin molecule enable the red cell to perform several other functions very efficiently. For example, they contain a large quantity of carbonic anhydrase which catalyzes the reaction between carbon dioxide and water. This enzyme speeds the reaction by 250 times and thereby allows for the transfer of carbon dioxide from the tissues to the lungs. Also, because red cells contain hemoglobin and electrolytes, they are responsible for 70 percent of the buffering power of whole blood.

MATURATION AND FATE OF RED CELLS

The primitive PROERYTHROBLAST is the first red cell derived from the stem cell. It is a large cell with a large nucleus with several nucleoli and a basophilic cytoplasm. This cell

may undergo up to four mitotic divisions so that each proerythroblast may give rise to 16 cells.

Following the loss of the nucleolus, it is called an ERYTHROBLAST. When hemoglobin develops in the cytoplasm, it is called a NORMOBLAST and is still nucleated. The loss of the nucleus results in the RETICULOCYTE, still a basophilic form of residual cytoplasmic RNA. Reticulocytes account for 2 percent of normal cells. Once released in the peripheral blood, the reticulocyte loses this material and becomes a normal mature red blood cell, the ERYTHROCYTE.

An erythrocyte normally circulates for an average of 120 days before the cell is removed. A mature red cell contains a number of enzyme systems; however, because it does not have a nucleus it is unable to synthesize new proteins including enzymes. When the enzyme systems "wear out," the cell can't maintain its normal shape and flexibility. The cell membrane becomes very fragile and while deformed and squeezing through a capillary, it fragments. Much of this fragmentation takes place in the spleen. The cell membrane having ruptured releases hemoglobin into the plasma and the remaining "ghost" cell is removed by the reticuloendothelial cells lining blood vessels in the splenic sinusoids, the liver and bone marrow.

ABNORMALITIES OF MORPHOLOGY

ACANTHROCYTES or "thorny erythrocytes," are broad, spiny projections on red cells which causes cells to be very fragile. This is a rare condition which may be seen in thyroid deficiency (hypothyroidism, myxedema).

ANISOCYTOSIS refers to consid-

erable variation in red cell size.

BASOPHILIC STIPPLING is a condition in which extremely minute intracytoplasmic granules are demonstrated with basic dyes. Cells are polychromatic. Abnormal if more than 3 cells per 1000 are found. Seen in lead poisoning and megaloblastic anemia.

DIMORPHIC refers to two populations of red cells found on a peripheral blood smear, e.g. hypochromic and normochromic cells.

ELLIPTOCYTES are oval or elongated red cells, "banana cells." It is an inherited trait.

HOWELL-JOLLY bodies are small black granules which represent nuclear remnants of red cells. Seen in greater numbers after splenectomy and in megaloblastic anemia.

HYPOCHROMIA refers to pale staining cells and is associated with microcytes.

MACROCYTES are abnormally large red cells.

MICROCYTES are abnormally small red cells.

POIKILOCYTOSIS refers to presence of irregularly shaped red cells.

POLYCHROMASIA refers to grey coloration in red cells indicating the presence of RNA.

ROULEAUX is the piling of red cells atop each other resembling a stack of coins.

SCHISTOCYTES are cell fragments seen on peripheral blood film.

SPHEROCYTE is a small spherical red cell which has lost its central concavity.

TARGET CELLS are thin, flat red cells with a densely stained center.

ANEMIA

Pathophysiology

As used in clinical medicine, anemia refers to the abnormal reduction of circulating red cells or a reduced quantity of hemoglobin per given volume of blood in an individual in normal fluid balance. Fundamentally, the diminished oxygen-carrying capacity of the blood causes the effects of anemia, and because all cells require oxygen, all organs suffer.

The viscosity of the blood which is almost entirely dependent on red cells may decrease up to 50 percent. The decreased viscosity minimizes resistance by peripheral vessels and thus an abnormally greater volume of blood is returned to the heart. The cardiac output is often increased two or more times normal. Extra stress on the heart together with an already reduced oxy-

gen supply can lead to heart failure.

While a severe degree of anemia may cause few or no subjective symptoms, very mild grades of anemia may account for intolerable symptoms. The unfolding of symptoms associated with anemia depends on (1) the period of time in which the anemia developed; (2) the cause of the anemia; (3) the cardiovascular status of the patient; and (4) the degree of reduced oxygen capacity by the blood.

If the onset of the anemia is very slow, the patient can slowly adjust and compensate to the developing anemia and may initially have few complaints. However, when he begins to work or exercise, his cardiac output can't keep pace with the oxygen demand of cells and consequently extreme tissue anoxia results and acute heart failure will ensue. If the anemia developed so quickly that compensatory mechanisms and physiological adjustments could not be made, then symptoms of hypoxia are likely to be seen early and may be profound.

The prominent signs and symptoms that are detectable in organ system degeneration will depend on the etiology of the anemia. For example, in processes where there is rapid destruction of blood, the chief symptom will be associated with jaundice, fever or abdominal pain. Anemias caused by abnormal maturation or formation of red cells will cause symptoms associated with the respiratory, gastrointestinal and neuromuscular systems.

Patients with cardio-vascular disease do not adjust to anemia as do normal patients. In older patients with narrowed coronary blood vessels, the compensatory increase in coronary flow is negated, and angina may appear in a person with subclinical coronary atherosclerosis or the anemia may intensify an existing angina. The increase in heart rate and cardiac output gives rise to a patient's awareness of palpitations. Respiratory complaints of dyspnea and rapid breathing even at rest usually follow, and are dependent and associated with the changes in the cardiovascular system.

The variety and severity of clinical manifestations are also dependent on the degree of reduced oxygen carrying capacity of the blood and are intimately related to the period of time over which the anemia has developed. A compensatory mechanism which reduces the affinity of hemoglobin for oxygen facilitates the use of oxygen by tissues. Thus oxygen utilization and carbon dioxide transport can proceed

in a relatively normal manner. However, when the limits of hemodynamic adjustments are reached, cardiac failure will follow.

Anemias are classified according to etiology and/or morphology. While the etiologic classification primarily aims at identifying causes for the anemia and is based on the pathophysiology of the disorder, the mechanism may be somewhat more complex than the classification indicates. It is rather misleading, because it implies that the mechanisms are purer than they really are. For example, anemia secondary to chronic blood loss is fundamentally an iron deficiency anemia. The following classification serves to categorize the anemias on an etiologic basis. As shown in Table I, anemias result from (1) loss of blood, (2) excessive red cell destruction, or (3) decreased red cell production.

Table I.
Anemias: Etiologic Classification

I. Loss of blood
A. Acute
B. Chronic
II. Excessive red cell destruction (hemolysis)
A. Intra-cellular causes
1. Sickle cell
2. Thalassemia
3. G-6PD deficiency (Glucose-6-phosphate dehydrogenase)
4. Hereditary spherocytosis
5. Other congenital hemolytic diseases
B. Extra-cellular causes
1. Anemia associated with infection
2. Autoimmune causes
3. Traumatic hemolytic anemias
III. Decreased red cell production
A. Iron deficiency
B. B ¹² deficiency
C. Folic acid deficiency
D. Bone marrow depression or failure

Because characteristic changes in size, staining and hemoglobin concentration of the red cell occurs in the variety of anemias, a morphologic classification is helpful in distinguishing them. The morphologic classification is based on the mean corpuscular volume (MCV), the mean corpuscular hemoglobin concentration (MCHC) and the description of the staining characteristics of the red cells as seen in the peripheral blood smear. The normal values are shown in Table II.

Table II.
Normal Adult Red Cell Values

	Male	Female	Variation
Hemoglobin (gm. per 100cc)	16	14	
Hematocrit (volume percent)	47	42	± 10%
Red cells ($\times 10^6$ per mm ³)	4.9	4.4	
Mean cell volume (MCV)	95		± μ^3
Mean cell hemoglobin concentration (MCHC)	34		± 2 gm/100cc

Laboratory studies identify microcytic (small red cells with MCV less than $87\mu^3$) and macrocytic (large red cells with MCV greater than $103\mu^3$) cells, as well as differentiating between hypochromic and normochromic red cells. The MCHC can be calculated from the hemoglobin and hematocrit values. With this morphologic data, treatment can be initiated and guided to some extent. This classification is therefore of therapeutic and practical value. The morphologic classification of anemias is shown in Table III.

Table III.

Morphologic Classification of Anemia

- I. Macrocytic Anemias
 - A. Deficiency States
 1. B_{12} deficiency (Pernicious Anemia)
 2. Folate deficiency
 - B. Malabsorption states
- II. Normochromic Anemias
 - A. Acute blood loss
 - B. Lack of blood formation-hypoplastic and aplastic anemias
 - C. Destruction of blood-acute and chronic hemolysis
- III. Hypochromic Microcytic Anemias
 - A. Iron deficiency
 1. Chronic blood loss
 2. Poor intake, faulty absorption or increased demand for iron
 - B. Thalassemia
 - C. Lead poisoning
 - D. Sideroblastic anemias

MACROCYTIC ANEMIAS

Folic acid and vitamin B_{12} are essential co-enzymes in the synthesis of nucleoproteins and DNA. Deficiencies in either folic acid or vitamin B_{12} result in failure of the red cell to mature normally ("Maturation arrest") in the bone marrow and throughout the body. This arrested maturation results in the appearance of huge megaloblastic red cells with bizarre nuclear chromatin patterns which reflect its immaturity.

The red cells released into the blood are so large that the MCV is always in the 100-160 μ range. Because there is a proportional increase in the hemoglobin content in the immature red cells, the MCHC remains normal.

B_{12} Deficiency (Pernicious Anemia)

Pernicious anemia is the most common form of macrocytic anemia. Although B_{12} is available in the normal diet, it is necessary for B_{12} ("extrinsic factor") to combine with an "intrinsic factor" before it can be absorbed. Intrinsic factor is an unidentified substance secreted by gastric parietal cells which has a strong binding affinity for B_{12} and facilitates its absorption in the ileum. Regardless of the cause, it is the absence of intrinsic factor which causes pernicious anemia.

Clinical Manifestations

Pernicious anemia is a chronic type of anemia and typically its onset is insidious. In addition to the classic triad of lethargy, sore tongue and numbness and tingling of the extremities, other complaints include headaches, dizziness, nausea, vomiting, loss of appetite, shortness of breath and pallor.

Painful and burning tongue is a very common complaint and often is the first symptom of the disease. The papillae on the entire dorsum of the tongue can atrophy. Inflammation and redness account for the description of a sore, "beefy red" tongue. The progressive atrophy of the papillae leaves the tongue smooth or "bald." The oral mucous membranes are pale, yellowish and glistening with marked, generalized atrophy. Because of defective red cell formation, red cell life span is shortened and the cells readily hemolyze. The hemolyzed blood is responsible for the yellowish tinge of the oral mucosa, skin and scleras.

The most notable neurologic complaints include loss of vibratory sense in the lower extremities and incoordination of the legs and fingers, causing affected individuals to develop a broadbased gait. These neurologic changes are secondary to spinal cord degeneration and are attributed to defective synthesis of nucleoproteins.

Schilling Test

This test offers a means to demonstrate defective absorption of vitamin B_{12} by the gastrointestinal tract even in the absence of anemia. If radioactive B_{12} is given by mouth to individuals with adequate intrinsic factor, the B_{12} will be absorbed and will appear in the urine. Normally 10-25 percent of the radioactive B_{12} will be excreted in 24 hours. Patients with pernicious anemia will excrete only 0 to 7 percent. B_{12} will not be absorbed and recovered in the urine, rather it will appear in the feces.

Folate Deficiency

Vegetables, dairy products and meats are rich in folic acid. Body stores of folic acid are not as ample or as durable as B_{12} . Folic acid is absorbed from the jejunum and deficiencies result from inadequate diets, drugs that inhibit enzymatic reduction of folic acid (Methotrexate, Dilantin and Mysoline) and small bowel resection. The folate acid deficiency anemia is indistinguishable from pernicious anemia and produces identical clinical effects.

The treatment of pernicious anemia usually requires the lifelong administration of vitamin B_{12} , best given by injection. Folic acid deficiencies can be completely reversed with administration of folic acid.

NORMOCHROMIC ANEMIAS

Acute hemorrhagic anemia results from the acute loss of a large volume of blood. Following the emergency, treatment is directed at providing the patient with a high protein diet and iron therapy is given depending on the depletion of the body stores and to what extent the loss was reversed with transfusions.

Hypoplastic and Aplastic Anemias

In general, normochromic anemias are caused by toxic effects which inhibit production and decrease the life span of the red blood cells. Bone marrow depression from chronic renal failure, infection or inflammation, or by invasion of the marrow by lymphoma, metastatic disease or leukemia, or from marrow depressant drugs are among the most common causes.

Clinical Manifestations

Symptoms are referable to the underlying disease. The anemia contributes to the patient's fatigue, pallor and dyspnea; however, the concomitant leukopenia and thrombocytopenia account for susceptibility to infection and hemorrhagic diathesis.

Decreased platelets may cause frank hemorrhage into the oral cavity. Purpuric spots or hematomas may occur spontaneously throughout the mouth. The neutropenia and lack of resistance to infection set the stage for the development of ulcerative lesions about the oral mucosa and pharynx. The gingivae are pale, swollen and painful.

Routine hematologic studies reveal only a normochromic anemia and a definitive diagnosis depends on a bone marrow biopsy. Treatment is aimed at the underlying cause and prognosis is rather poor.

HEMOLYTIC ANEMIAS

The cardinal feature of hemolytic anemias is the short life span of the red blood cells. If the bone marrow actively responds, a patient can be in a compensated hemolytic state without anemia. Thus, reticulocytosis, increased erythroid activity, excessive destruction of red blood cells and splenomegaly are associated with hemolytic anemias.

Hereditary Spherocytosis

This disorder is inherited as a Mendelian dominant. Normal red cells are biconcave; however, in this disease red cells are not only flat, but biconvex. They easily burst and readily hemolyze. It is thought that a cell membrane defect causes the cell to be rigid and to have increased fragility. Because of their shape, they are unable to circulate freely through the splenic sinusoids. They become trapped and are destroyed, thus accounting for the splenomegaly.

Breakdown of red cells increases bilirubin, thereby causing jaundice primarily seen in the skin, sclera and oral mucous membranes. Striations and thickening of the frontal and parietal bones may be seen on radiologic examination and occasionally a tower skull is encountered.

Spherocytes are prominent in the peripheral blood smear. The reticulocyte count is increased as is the serum bilirubin. Bone marrow is hyperplastic. If spherocytic cells are exposed to varying concentrations of saline, spherocytes will lyse at less hypotonic concentrations than normal cells.

Splenectomy usually eliminates hemolytic episodes and while spherocytosis persists following splenectomy, it is less severe.

SICKLE CELL ANEMIA

This anemia is characterized by an abnormal hemoglobin which causes sickling and hemolysis of red blood cells. Normal hemoglobin contains four protein chains: two alpha chains each with 141 amino acids and two beta chains each with 146 amino acids. In sickle cell disorders, a single amino acid substitution (valine replacing glutamine in the sixth position on a beta chain) causes red cells to become crescent shaped when exposed to low oxygen tension and lowered pH. The tips of this half-moon cell help form plugs of sickled erythrocytes which occlude blood vessels. It is the resultant thrombosis and infarcts which account for the clinical picture.

This disorder is found only in Negroes and is inherited. If only one parent has the disease, the "sickle cell trait" will be conferred to offspring. Individuals with sickle cell trait have 20-45 percent sickle cell hemoglobin. If both parents have the trait, half the offspring will acquire the trait and one-fourth will acquire the disease. Individuals with the disease have between 76-100 percent sickle cell hemoglobin. Nine to

14 percent of black Americans have the trait while 0.5 to 1.5 percent have the disease.

Clinical Manifestations

Jaundice and splenomegaly occur early in this disease following frequent splenic infarcts. Peripheral infarcts from multiple thrombi cause severe abdominal and joint pain. Shortness of breath is common; all organ systems are susceptible. A patient is in sickle cell "crisis" when severe abdominal pain and joint pain are associated with fever and nausea.

All the constitutional symptoms of anemia are present, e.g. weakness, fatigability, pallor and dyspnea. Skull radiographs frequently show perpendicular trabeculations which resemble a "hair on end" pattern as seen in Fig. 1. Generalized osteoporosis may be present. Dental radiographs may show loss of trabeculation in the maxilla and mandible especially around alveolar bone. There are frequently large, irregular marrow spaces throughout the mandible as seen in Fig. 2. Osteomyelitis of the jaws is easily precipitated.



Figure 1. "Hair on end" pattern in Sickle Cell Anemia.

Laboratory Findings

Sickle cell disorders may be suspected because of family history. A simple test, a "sickle cell prep" requires only a finger stick and a drop of blood placed on a slide and exposure to a reducing agent such as metabisulfite. If the trait or disease is present, the red cells will distort and mimic half-moons. If this test is positive, a hemoglobin electrophoresis will confirm abnormal sickle cell hemoglobin. Considering that the incidence of the trait has been found to be as high as 16 percent in some areas, this test should be performed on all black patients. Identifying patients with sickle cell disorder will help avoid or intercept many potentially acute crises.

Sickle cell disease is a serious disease and is usually fatal before age thirty. However, remissions and relapses are common and prognosis improves as adulthood is reached.



Figure 2. Irregular Marrow Spaces in Sickle Cell Anemia.

HYPOCHROMIC MICROCYTIC ANEMIA

Iron Deficiency Anemia

Iron deficiency anemia is a disorder in which the iron supply is inadequate to support optimal erythropoiesis in the developing red cell mass. The two primary causes of iron deficiency include chronic blood loss and dietary dysfunction. Chronic occult hemorrhage often goes unnoticed by both patient and physician; therefore proper evaluation and good history taking are essential. In men, the most common causes are disease processes which involve the gastrointestinal tract, e.g. peptic ulcer and various forms of cancer, while in women the deficiency manifests itself during periods of increased menstruation and pregnancy.

Dietary requirements range from 1.5-2 mg. of iron per day which is 10 percent of the usual daily dietary intake. This is found to be sufficient for men but inadequate for women due to their increased demands for iron. Malabsorption of iron in the gastrointestinal tract is uncommon. When it occurs it may be associated with sprue or idiopathic steatorrhea. Vitamin C and HCl have been shown to increase absorption while phosphates depress it. The disease process is chronic with an insidious onset of symptoms. Treatment consists of providing the patient with a sufficient amount of iron. Iron is best administered by

mouth since parental administration is seldom necessary.

Clinical Manifestations

The generalized symptoms of anemia, e.g. fatigue, weakness and dyspnea are present. Atrophy of both the filiform and later the fungiform papillae occur, resulting in a red and painful tongue. Angular cheilitis and loss of keratinization of the oral mucous membranes are evident as seen in Fig. 3. Patients discovered to have Plummer-Vinson syndrome often present with dysphagia resulting from esophageal webs which form secondarily to the process of atrophy of the mucous membranes of the upper alimentary tract. The skin of these patients has a yellow pallor while their fingernails are quite brittle and spoon shaped (Koilonychia).



Figure III. Angular Cheilitis in Iron Deficiency Anemia.

THALASSEMIA

This anemia is due to an autosomal recessive trait occurring most often in Greek, Italian, Armenian or Syrian nationalities. The classical form begins early in life and is marked by erythroblastosis of the red blood cells. The etiology of it is unknown but is thought to be due to abnormal globin synthesis.

Clinical Manifestations

Pallor of the skin, generalized weakness, splenomegaly and a characteristic facies are present. Prominence of the premaxilla and pallor of the oral mucosa resembling that of the skin are seen. Roentgenographically, the

maxilla and mandible are found to have a distinctive trabecular pattern which is described as a "salt and pepper" appearance. Skull radiographs reveal the "hair on end" effect produced by trabecular striations from the inner table of the skull. Circular radiolucencies in the alveolar bone and thinning of the lamina dura have been noted.

LEAD POISONING

Lead poisoning is infrequent today in the U.S. principally because of federal regulatory measures which prohibit the use of lead in paints, toys and in many other frequently used household products. When it occurs today, it usually results from inhalation of poisonous gases.

Clinical Manifestations

Clinical symptoms include colic, nausea, peripheral neuropathies and anemia. The pallor is quite pronounced and is attributed to spasm of small vessels in the skin. The anemia is determined by laboratory studies and is mild, characterized by the pressure of a large number of erythrocytes with basophilic stippling. X-rays of children often show a lead line at the epiphyses.

Oral manifestations include a coated tongue, increased salivation and mucosal alteration. In patients with poor oral hygiene, a "lead line" of black lead sulfide may develop along the gingival margin.

Treatment consists of preventing further exposure and attempting to reduce the concentration of the lead in the blood. Recently Versene permits deleading with a marked degree of safety.

POLYCYTHEMIA VERA

Polycythemia vera, erythremia or Osler's disease, is a disorder of unknown etiology with a slow and chronic course which is ultimately fatal. It is characterized by an absolute increase in circulating red blood cells, white cells and platelets. A red cyanosis of the skin, splenomegaly and increased viscosity of the blood are additional features.

The pathophysiologic changes are all related to the increase in total blood volume. All organs are engorged with viscous blood, and thrombosis and anemic infarcts are not uncommon. Excessive bleeding following minor injury or surgery is attributable to decreased platelet factors and friability of blood clots.

Clinical Manifestations

The face has a deep red, dusky hue. The unusual color is most notable in the lips, cheek and tip of the nose; the gingiva are engorged, swollen and bleed very easily. The oral mucous membranes and tongue also have the same deep purplish color. Submucosal petechiae are not uncommon.

Treatment is symptomatic and relief can be achieved by phlebotomy. A pint of blood may be removed twice a week to reduce blood volume. Recently, radioactive phosphorus has been used to treat this disease. Remissions and relapses are common. Death usually occurs 8 to 10 years following its onset.

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NEW CELL PARTICLE MAY BE MARKER FOR LEUKEMIA

A UNC-CH scientist has discovered a new, functioning cell organelle (particle) in both human and animal cells that may become a marker for diagnosing acute granulocytic leukemia.

Dr. Jacob S. Hanker of the UNC-CH Dental Research Center theorizes that the new cell organelle, found in both abnormal and normal cells, may act to manufacture and package enzymes for cell use, storage or elimination.

He also speculates that its presence in a cell may be an early indicator that something is wrong.

Called a "Phi body" because its unique spindle shape resembles the Greek letter Phi (ϕ), the cell organelle was first found with the light microscope in the salivary gland duct cells of certain normal mice and rats exposed to particular drugs and insecticides.

An important observation, Dr. Hanker said, is that Phi bodies are only identified in white blood cells of persons with acute granulocytic leukemia — as opposed to their absence in normal white blood cells.

"The discovery of the Phi body may greatly aid the identification of this disease by pinpointing it in its very early stages when diagnosis is difficult," said the UNC-CH histochemist and professor.

Dr. Hanker suggests that the Phi body gives birth to Auer rods, which have been noticed for years in the white blood cells of persons with acute granulocytic leukemia.

Shining Light Through Head May Save Lives

Using the same principle that allows a child to see light through his hand when he pressed a flashlight against it, a Duke researcher has devised a method of determining how well brain cells take up oxygen from blood.

Dr. Frans Jobsis, professor of physiology, said he believes the new technique eventually may help to save lives in hospital intensive care units and have a number of other useful medical applications as well.

It involves sending harmless infrared light through the skull and to the brain and then measuring how much of the light emerges on the opposite side of the head.

Less than bright sunlight

Jobsis, who performed the first human experiments on himself, said there is no pain involved and no radioactivity. Less infrared light is required than a person would receive walking in bright sunshine.

"Science" magazine published an account of his research in its Dec. 23 issue, reprinted in this issue of the N.C. DENTAL JOURNAL. (Page 25)

In an earlier interview, the scientist explained that when blood squeezes through capillaries in the brain, hemoglobin molecules contained in red cells release oxygen to a respiratory enzyme found in nerve cells.

This enzyme, called cytochrome aa-3, changes color as it becomes rich in oxygen and absorbs more infrared light particles than it does when it is oxygen deficient.

More light, less oxygen

A device known as a photomultiplier transforms infrared light that has passed all the way through the head into an electric current that can be continuously monitored. Jobsis said that increases in the amount of light recorded corresponds to decreases in oxygen.

"Just about all deaths can be attributed to a lack of oxygen in the brain," the scientist said. "A person doesn't die because his heart stops, for example, but because the mechanism for

transporting oxygen to brain cells has broken down."

Currently, physicians in intensive care units can record the oxygen content of blood, blood pressure and the circulation of blood within the head. Monitoring circulation, however, requires radioactive tracers that are unsafe to use continuously.

All of these measurements are indirect, Jobsis said, and the brain may begin dying before medical personnel are aware of it.

"The crucial difference here is that we can now directly observe the enzyme that takes oxygen so that we are as close as possible to observing the whole purpose of the vascular system," he said.

Lasers that produce exact wavelengths of infrared light are used in the continuing experiments since they require little power. Flexible bundles of glass fibers carry the light from the lasers to the head and then back to the recording equipment.

Infrared light was selected, the scientist explained, because it has a much greater ability than visible light to penetrate biological materials. In-

frared lies just beyond what humans can see in the visible spectrum as the color red.

Jobsis said he's been studying optical techniques for measuring metabolism in living tissue for 20 years, but it has only been within the past year that he discovered how deeply infrared light can penetrate.

He now is working on applying the technology toward oxygen sufficiency in the heart. Lack of the essential element in heart tissue results in heart attacks.

Two other applications he envisions include regulating the amount of oxygen administered to premature babies in hospital nurseries and determining whether blood is flowing adequately through certain vessels after surgery.

Too much oxygen is toxic and can cause infants to go blind, he said. Too little oxygen will cause skin flap transplants and fingers that have been reattached after accidents to die.

"I think this work may become a good example of the benefits that accrue from basic research for the alleviation of human illness and suffering," he added.



IN ONE SIDE AND OUT THE OTHER — Dr. Frans Jobsis, professor of physiology, models a new device he has created to measure how well brain cells take up oxygen from hemoglobin. The equipment records changes in absorption of infrared light that has passed all the way through the head. (Photo by Jim Wallace)

Noninvasive, Infrared Monitoring of Cerebral and Myocardial Oxygen Sufficiency and Circulatory Parameters

Abstract. *The relatively good transparency of biological materials in the near infrared region of the spectrum permits sufficient photon transmission through organs in situ for the monitoring of cellular events. Observations by infrared transillumination in the exposed heart and in the brain in cephalo without surgical intervention show that oxygen sufficiency for cytochrome a,a₃ function, changes in tissue blood volume, and the average hemoglobin-oxyhemoglobin equilibrium can be recorded effectively and in continuous fashion for research and clinical purposes. The copper atom associated with heme a₃ did not respond to anoxia and may be reduced under normoxic conditions, whereas the heme-a copper was at least partially reducible.*

When photons impinge on biological materials, their transmission depends on a combination of reflectance, scattering, and absorption effects. Reflectance is mainly a function of the angle of the light beam to the tissue surface, whereas the scattering and absorption are wavelength-dependent properties. Scattering decreases with increasing wavelengths, favoring thereby the transmission of infrared (IR) light. Absorption occurs at specific wavelengths, determined by the molecular properties of the materials in the light path. Thus variations occur in the effectiveness of transmission through animal tissues within the ultraviolet through the IR range. Above 1300 nm, water absorbs all photons over a pathlength of less than a few millimeters in normally hydrated tissues. In the visible part of the spectrum, below 700 nm, the intense absorption bands of hemoglobin (Hb) and increasing light scattering phenomena again prevent transmission over longer pathlengths. However, in the 700- to 1300-nm range of the near IR, a significant amount of radiation can be effectively transmitted through biological materials over longer distances.

Within this IR range cytochrome a,a₃ (cytochrome c oxidase), the terminal member of the respiratory chain has a weak absorption band. In his original description of the cytochromes, Keilin showed that the absence of oxygen resulted in the complete reduction of cytochrome a,a₃ (1). This conclusion was based on spec-

troscopic observations on the two heme moieties of the enzyme in the visible range. More recently it was shown that the two copper atoms of cytochrome a,a₃ follow this behavior (2). When oxidized, a weak absorption band exists in the 780- to 870-nm region of the near IR with a broad maximum from 820 to 840 nm. Upon reduction of the enzyme, this band disappears.

Cytochrome a,a₃ reacts directly with molecular oxygen. Transfer of four electrons from this enzyme to oxygen and concomitant or subsequent reaction with four hydrogen ions leads to the formation of two molecules of water. This final redox reaction of the respiratory chain accounts for more than 90 percent of all cellular oxygen utilization and, therefore, is of singular importance in cellular metabolism. Since more than 90 percent of cellular free energy is derived from the redox reactions of the chain, an insufficient supply of oxygen to cytochrome a,a₃ leads promptly to physiological dysfunction and ultimately to cell death.

Because of the physiological importance of this enzyme and the favorable IR transmission characteristics in this range, it appeared useful to attempt to observe the oxygen dependent absorption peak in intact organs in vivo. In addition, disoxygenated Hb exhibits a weak absorption peak at 760 nm, whereas the oxygenated form (HbO₂) does not (3). Useful information on blood oxygenation in the tissue could therefore be expected if success in IR transmission could be achieved. Previous development of sensitive spectrophotometric techniques by Chance

(4) provided means to measure in intact cells and excised tissues cytochrome absorption bands in the visible region (5). A modification of this technique appeared to hold promise for success.

The brain is most sensitively dependent on oxygen for normal function and is readily accessible with minimal interference of overlying tissues. Initial experiments on near IR monitoring of oxygen sufficiency for cellular function were, therefore, performed by transillumination of the cranium without surgery. Cats were anesthetized with pentobarbital (40 mg/kg), tracheotomized, intubated, and provided with femoral arterial and venous cannulas. Hair was removed over two areas (approximately 2 cm² each) at both temples by a depilatory agent. The head was immobilized in a stereotaxic holder and light-conducting optic fiber bundles were applied with firm pressure against the skin at both temples. One, a Y-shaped bundle, transmitted the appropriate wavelengths of near IR radiation from two monochromators to one temple, the other conducted the light emerging from the opposite side of the head to an IR sensitive photomultiplier tube (Hamamatsu R928) for detection and measurement. Two 6.6-nm spectral bands were presented alternately at a repetition rate of 60 hertz. Appropriate electronic circuits amplified and demodulated the separate signals, converted them to d-c and subtracted them by means of a differential amplifier for a difference readout (6). One wavelength band served as reference for the other (sample) band. For the

reference wavelength the isobestic point of Hb-HbO₂ at 815 nm was selected. A negative feedback circuit on the high voltage source supplying the photomultiplier stabilized the reference signal against absorption changes in the tissue at that wavelength. In the subsequent interval, when the sample wavelength was presented, this high voltage was maintained. Thus, the differential measurements were corrected for variations in cerebral blood volume. As an additional benefit, the voltage changes in the photomultiplier supply became indicative of the changes in blood volume in the optical path and were, therefore, also recorded (6).

The sample wavelength was varied in steps, first in the normoxic state, then in anoxia after asphyxiation (Fig. 1, top curve). These results are ascribed to cerebral reactions since contributions from extracerebral tissues were found to be negligible in separate experiments. At lower wavelengths (740 to 780 nm) the data points conform

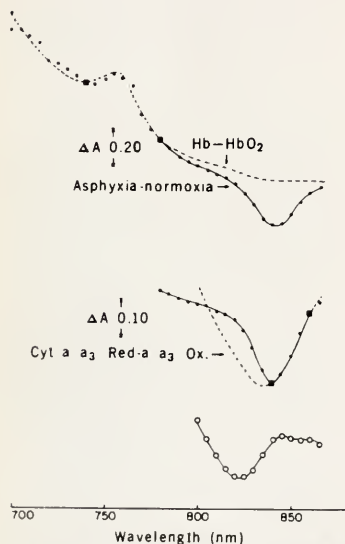


Fig. 1. (Top) Difference spectrum of a transilluminated cat's head between anoxia and normoxia. The data points (dots) conform to the difference spectrum of Hb minus HbO₂ (broken line) normalized at 740 and 780 nm (square points) except in the region above 780 nm. (middle). The 780- to 865-nm range after subtraction of the Hb-HbO₂ curve; drawn on a twice larger scale. The broken line shows the *in vitro* difference spectrum of purified reduced minus oxidized cytochrome a₃ normalized to the present data at 840 and 865 nm (7). (Bottom) The 800 to 865 nm region of purified cytochrome a₃ after subtraction of the present data from the purified enzyme difference spectrum.

satisfactorily to the normalized difference spectrum of Hb-HbO₂. At higher wavelengths (780 to 865 nm) the significant trough in the cytochrome a₃ absorption region has a minimum at approximately 840 nm (ranging from 834 to 851 nm in separate experiments) (Fig. 1, middle curve) (7). The greater sharpness of the *in vivo* data is interpreted as showing a missing component in the cytochrome a₃ band. Subtraction of the *in vivo* from the *in vitro* curve, shown in the bottom curve of Fig. 1, reveals the maximal difference at 822 nm (810 to 822 nm in separate experiments). Administration of a gas mixture of 15 percent carbon dioxide and 85 percent oxygen to artificially ventilated animals resulted in an inverted spectrum of approximately the same shape though somewhat broader in the 800- to 860-nm range than the one shown in Fig. 1. The absorption maximum was found to occur at 820 nm (813- to 828-nm range in separate experiments). This is interpreted as showing that the "missing component" does respond to increased O₂ availability. Some increased optical density at 840 nm, resulting in the greater breadth of the absorption band in hyperoxia, indicated an oxidation of the 840 nm component as well.

Recent results of Chance and Leigh (8) indicate that, in the oxidized state, the copper more closely associated with the heme a₃, the so-called high potential copper (CuH), contributes mainly to the lower wavelength part of the near IR band. Oxidized low potential copper (CuL) associated with heme a₃ predominates at the higher wavelengths. Both lose most of their absorbance when reduced. From this consideration and from confirming experiments *in vivo* on cyanide inhibition of cytochrome a₃, it is concluded that the relatively narrow 840-nm trough results from the reduction of CuL. Apparently even in normoxia the steady-state redox level of the CuH population is already practically completely reduced. However, a significant fraction of the CuL is oxidized, which agrees with the partial oxidation (15 percent) of heme as observed in the exposed brain by reflection spectrophotometry (9). The quantitative assessment of the degrees of oxidation of the two copper atoms in normoxia must await experiments on complete oxidation with hyperbaric oxygen or other oxidizing agents.

Similar experiments were also performed on the exposed dog's heart in

situ. The entry optic fiber bundle was placed against the pericardium with sufficient pressure to contact the right side of the heart slightly above the apex. On the opposite side a massive (2.5 cm in diameter) bundle collected the transmitted IR light. It was focused on the end window of a cooled photomultiplier by means of accessory optics (DIL, Inc.) (10). Because of the large volume of blood in the chambers, the attenuation of IR light was significantly greater than in the experiments on the cat's head. Measurement of the photomultiplier current was precluded and a photon counting technique (Ortec, Inc.) was used instead. Even so, through a combination of decreasing photomultiplier sensitivity and light intensity, the signal above 840 nm was too weak to allow the collection of meaningful data.

Under steady illumination ten counting periods of 10 seconds each were first recorded at a number of wavelength settings under normoxic, artificial respiration. After anoxic death by asphyxia, counting was repeated. The resulting data were converted to the change in absorbancy (ΔA) and are shown in Fig. 2. The spectrum above 800 nm shows a larger decrease in the light absorption characteristics than in the Hb-HbO₂ spectrum. The shift toward a more narrow band at higher wavelengths than for

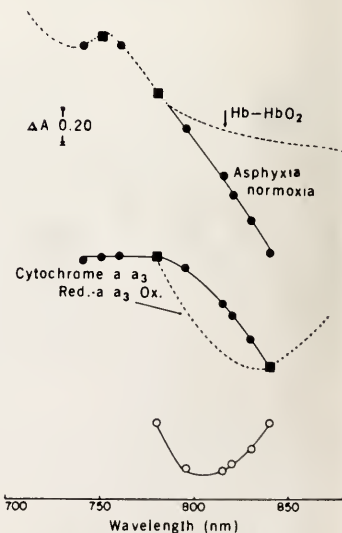


Fig. 2. Anoxic-normoxic difference spectrum of a transilluminated dog heart *in situ* and its analysis in various components. The figure was constructed as described in the text and in the legend to Fig. 1.

cytochrome a_{a3} is revealed. When the *in vitro* cytochrome a_{a3} difference spectrum is subtracted, the missing lower band is found to be centered around 810 nm approximately (810 to 815 nm in separate experiments).

Kinetic measurements were made on cerebral hemoglobin and cytochrome a_{a3} during temporary apnea produced by interruption of the artificial respiration for 3 minutes after the animal was paralyzed. In the top trace of Fig. 3A the signal at 760 minus 815 nm indicates the change of hemoglobin from a partially arterial to a more venous condition, $HbO_2 \rightarrow Hb$. The middle trace represents the negative voltage supplying the photomultiplier after feedback stabilization for constant reference signal (815 nm). The rise in the trace indicates a decreasing absorbancy at this $Hb-HbO_2$ isobestic point during the fall in blood pressure (lower trace). Apparently a measurable change in blood volume in the brain occurs when the circulation starts to fail (Fig. 3B).

Experimentation has been extended to the human brain. Because of the much greater pathlength (13.3 cm) as compared to the cat's head (approximately 5 cm, average) and consequent

loss of IR intensity, photon counting was required. The optic fiber bundles were placed somewhat above and frontal to the temples in order to avoid the masseter muscles (Fig. 4). Blood volume was monitored in this fashion at 815 nm, the $Hb-HbO_2$ isobestic point. The counts were significantly above background (darkness) over 10-second counting periods (*t*-test, $P \ll .001$). Voluntary hyperventilation, which decreases cerebral circulation by hypocapnia, was used as a functional test.

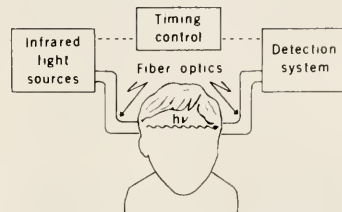


Fig. 4. Infrared monitoring of cerebral circulation and oxygen sufficiency.

A significant decrease in absorbancy, reflected in increased net counts (total counts minus background) was observed in sequential counting periods (Fig. 5). This de-

crease was correlated with statements by the subject who reported increasing degrees of dizziness starting in the third counting period. After the fifth period the subject felt too dizzy to continue and hyperventilation was terminated. Thus, partial cerebral ischemia was monitored.

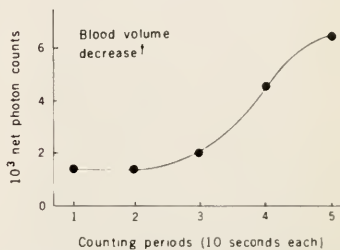


Fig. 5. Restriction of cerebral blood volume during voluntary hyperventilation. The subject was a healthy, 47-year-old, male, white volunteer with a larger than average head (13.3 cm diameter at the temples). The area of the light entry fiber bundle was 0.567 cm². The 10-second counting periods were interspersed with 1-second intervals for read-out. Hyperventilation was started shortly before the beginning of the first counting period.

The results indicate that a "window" for effective transmission of near IR light exists in biological materials and that cerebral $Hb-HbO_2$ steady states, the blood volume, the redox state of cytochrome a_{a3} , and thereby oxygen sufficiency can be monitored noninvasively. In addition, ongoing animal experiments show that cerebral blood flow rates can be measured quantitatively by means of close arterial injection of IR absorbing dyes or by a single-breath carbon monoxide technique (11). Myocardial measurements *in situ* without surgical intervention have as yet not been accomplished, although photon counts, statistically significant above background, have been recorded through the dog's chest over 20-second counting periods (*t*-test, $P < .001$). Further development of this technique for the myocardium must emphasize resolution within a single beat. This approach is awaiting improved instrumentation, especially in the form of higher intensity light sources.

The ability to monitor, continuously and noninvasively, oxygen sufficiency and circulatory parameters holds promise for a number of applications. The limiting factor at this moment appears to be the means of delivering sufficient light energy at selected wavelengths. The maximal intensity used in these studies was $48 \mu W \text{ cm}^{-2}$ in

(Continued on page 64)

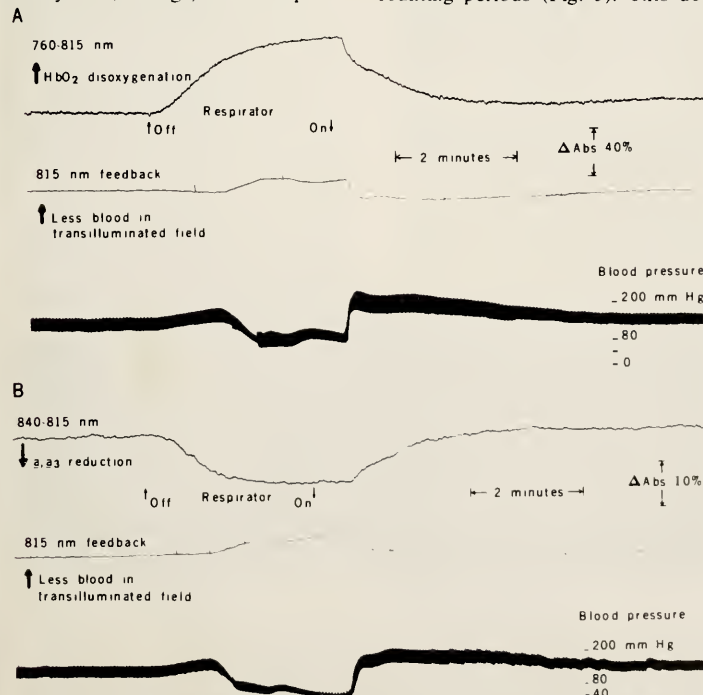


Fig. 3. Time course of the responses to hypoxic episodes of intracranial hemoglobin and blood volume (A) and of cerebral cytochrome a_{a3} (B) in a transilluminated cat's head.

AIRWAY INTERFERENCE AND ITS EFFECT UPON THE GROWTH AND DEVELOPMENT OF THE FACE, JAWS, DENTITION AND ASSOCIATED PARTS

"THE PORTAL OF LIFE"

Galen W. Quinn, D.D.S., M.S.

Some deformities of the face, jaws and dentition have been claimed to be genetic in origin, but present studies indicate that environmental influence is the predominant factor in most cases. Results from long-term longitudinal and cross-sectional studies clearly demonstrate that prognathisms, facial asymmetries, anterior and posterior openbite and some TMJ problems can be caused by the inability to breathe *properly* through the nose. It is further demonstrated that much root resorption (some blamed on orthodontic movement), gingival decalcification of the teeth, rampant caries, gingival recession, and alveolar bone loss or "periodontal disease" can be traced to improper function of the airway. Airway interference can be in the form of enlarged adenoid or tonsillar tissue, aberrant nasopharyngeal anatomy, cysts or polyps, allergies and acquired or congenital deformities of the nasal septum and turbinates. Surgical removal of airway obstruction and/or nasal cavity expansion has made possible successful treatment routinely of severe anterior and posterior openbites both in the growing individual and the adult without segmental surgery or surgery to the jaws. Mandibular prognathisms and many retrognathisms have been routinely successfully treated by early growth guidance succeeding the establishment of proper breathing capabilities.

The whole of the naturally sustained, healthy human body is totally dependent upon the ability of the *nasal* complex to properly introduce and prepare the elements of the air into the systems of the body to maintain the function of life.

Our investigations and discussions have been directed towards the multidisciplinary approach to airway interference and its effect upon the growth and development of the face, jaws, dentition, oral-nasal-pharyngeal complex and how these areas affect the general well being of the individual.

Deformities in this discussion will include malocclusions or malpositions of teeth, improper shape or posture of alveolar process, improper vertical (long face syndrome) or improper an-

teroposterior relationships of the jaws and dentition (prognathisms or retrognathisms).

To begin our investigations we set forth a group of questions that we have attempted to answer through evaluation of treatment results, investigation and research.

The questions that have been asked include:

1. What was the cause or causes of relapses or failures in orthodontic treatment results?
2. What kinds of deformities were being caused by airway interference?
3. What was the major cause of the deformities of the face, jaws and dentition that we were treating (malocclusions)?
4. What are the objectives and what are we examining in the face, jaws, dentition and oral cavity from the viewpoint of the various disciplines?
5. What type of diagnostic methods are used by the various disciplines for detection of airway interference problems?
6. When should a child be referred to other disciplines, and who is responsible for the guidance of proper growth and development of the various parts of the body at different times?
7. Do curriculums for dentists, physicians, nurses and physicians associates provide adequate knowledge and training in growth and develop-

ment, care and treatment of the face, jaws, dentition and oral cavity?

8. Do curriculums for physicians, nurses and physicians associates provide adequate knowledge and training for examining the jaws, dentition and oral cavity?

9. When do deformities of the face, jaws, dentition and associated parts, due to airway interference, become irreversible?

10. Are the deformities created in the young, by waiting to see if the child will "out grow" the cause (mainly breathing) of the deformities, worth the expense of continuous therapeutic treatment, anxiety and prolonged attempted corrective treatment?

11. Do early surgical procedures on the nose especially those procedures involving the nasal septum or the turbinates interfere with the development of the nose, face and jaws?

12. What is the importance of the lymphoid tissues in the nasal pharyngeal areas?

13. Can anatomical size of lymphoid or nasal pharyngeal structures as well as pathology affect the proper development of the face, jaws and dentition as well as the health of the individual?

14. Is removal of lymphoid tissue and corrective surgical procedures to prevent or make possible correction of deformities of the face, jaws and denti-

The following cases demonstrate some spontaneous corrections that can result from proper diagnosis and the elimination of the cause of the deformity (airway interference) without surgery to the jaws or prior to surgery to the jaws. Various age groups are represented.

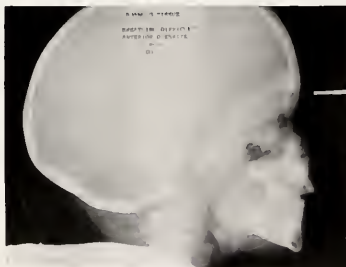


Figure 1a



Figure 1b

Case #1. Age 30 months. Diagnosis: Angle Class II, Cusp relationship. Anterior openbite, lingual axial inclination of lower anterior teeth and alveolar process, tongue in forward-dorsal position, cervical deformity. (Fig. 1a) Cause: Enlarged Adenoid Tissue. Results: Age 39 months — 9 months post adenoidectomy (partial). Note correction of molar relationship, marked reduction of anterior openbite, improved axial position of lower incisor teeth (even at this early age the alveolar process is permanently deformed), improved tongue posture, improved cervical posture and improved general health. (Fig. 1b)

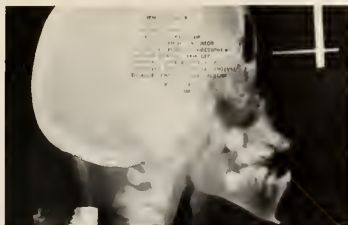


Figure 2a

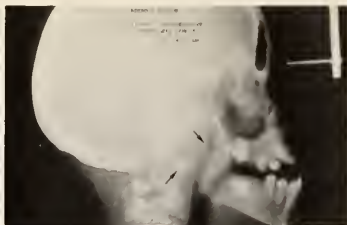


Figure 2b

Case #2. Age 10 yrs. 2 mos. Diagnosis: Angle Class III, cusp relationship, long lower face height, supereruption of posterior teeth, anterior openbite, improper posture of tongue, poor lip posture, severe cervical deformity, severe gingival disease, oral hygiene problem from mouthbreathing. (Fig. 2a) **Cause:** Primarily — Enlarged Adenoid Tissue. **Results:** 21 days post adenoidectomy (partial). Note increase in mandibular prognathism, reduced anterior openbite, improved cervical and face posture, improved tongue posture, and improved general health. (Fig. 2b)

tion a valid medical reason for surgical procedures?

15. Are there any long term studies that furnish valid proofs that early removal of nasopharyngeal lymphoid tissue causes problems in adults or the older age groups?

16. Is surgery justified or a valid medical means to relieve airway obstruction in order to assist in orthodontic treatment?

17. How important are the teeth and oral cavity to the various disciplines responsible for health care, especially the Pediatrician or Family Physician or Internist, Otolaryngologist, Plastic Surgeon, Allergist, Speech Pathologist, Orthodontist, and the various other disciplines in dentistry?

18. **Most Important:** How important are the teeth and oral cavity to the individual?

19. Is a dentist *entitled* to or *obligated* to make a recommendation for treatment of a non-tooth supporting structure that is the cause of a deformity of the face, jaws and dentition which interferes with proper general health, speech, swallowing, mastication and appearance?

The purpose of our investigations and communications has been to present our results in an attempt to improve relationships and understanding among the various disciplines and to offer a better service for the health and welfare of the citizens to whom we are responsible.

Airway Interference

A. CLINICAL HISTORY

1. General Appearance and Symptoms from Airway Interference

(a) Hypoxia or anoxia (pale and frail)

(b) Rundown appearance (severe cases)

- (c) Puffiness of upper eyelids
- (d) Dulled appearance of eyes
- (e) Redness of sclera (eyes)
- (f) Dennie's lines (creases lower eyelids)



Figure 3a



Figure 3b

Case #3. Age 16 yrs. Diagnosis: Angle Class III, cusp relationship, anterior openbite mandibular prognathism (from tongue posture), mouthbreather, improper tongue posture, "lazy" soft palate and cervical curvature and enlarged adenoid tissue. (Fig. 3a) **Cause:** Enlarged Adenoid Tissue. **Results:** 3 mos. post adenoidectomy. Partial closure of anterior openbite, tongue posture improved, soft palate tonus improved, cervical vertebrae posture improved and improved general health. (Fig. 3b)

- (g) Venostasis-blue or pink under eyes toward nose due to poor circulation
- (h) Underdeveloped infraorbital tissue "flat face"
- (i) Crease on nose (allergic salute)
- (j) Humping or broadening of middle of nose
- (k) Narrow nasal structures-nares
- (l) Underdeveloped ala of nose-unilateral or bilateral
- (m) Chapped nose (nares), lips and cracked lips
- (n) Nosebleeds, frequent, massive or slight
- (o) Hypotonic maxillary lip (pale thin)
- (p) Hypertonic mandibular lip (red thick)
- (q) Hypertonic mentalis muscle (puckering of chin)
- (r) Lip asymmetry-(upper elevated unilaterally-or size upper to lower)
- (s) Crease between mentalis and orbicularis oris muscle

(t) Wet-dry line on lips, especially lower

(u) Cracking at corners of mouth (cheilosis) old cracks or scars (due to drooling or tissue stress)

(v) White film around mouth from drooling (in corners) especially on side placed downward during sleep

(w) Face posture forward and tipped dorsally in relationship to cervical vertebrae

(x) Curvature of cervical vertebrae (like gasping for air)

(y) Unilateral or bilateral mandibular prognathism

(z) Mandibular hypoplasia-unilateral or bilateral

(aa) Facial asymmetry (unilateral mandibular prognathism)

(bb) Lack of appetite and energy

(cc) Complaints of rheumatism or

arthritic pains, stiffness and soreness in face, neck, and shoulders

(dd) Neurological disturbances

(ee) Postural problems-(comments from parents "can't you keep your mouth closed," "hold your head up," "keep your shoulders straight")

2. Oral Manifestations

(a) Poor oral hygiene "scum on teeth" (home for bacteria) (tissue slough from lips and oral mucosa)

(b) Lip licking, pulling upper lip down, and twitching upper lip, wiping teeth with finger, sleeve or napkin

(c) Dry mouth

(d) Foul breath (accumulation of material in nose-postnasal drip)

(e) High decalcification or caries incidence

(f) Improper tongue posture—"lazy tongue", appears to "thrust"

(g) Scalloped tongue from holding tongue between teeth, especially during swallowing

*Learning capabilities impaired—unusual drowsiness—"cat-napping"

(h) Discoloration of tongue due to antibiotics

(i) Red, swollen tongue from mouth breathing

(j) Geographic tongue (allergies)



Figure 4a

(k) Gingivitis or inflammation, buccal and lingual, hypertrophied rugae

(l) Gingival recession, "ribbing" or thinness of alveolar bone and bone resorption, "gum line cavities" or decalcification

(m) Labial, buccal and lingual exostosis of alveolar process due to holding tongue between the teeth

(n) Stained, hypocalcified, and deformed teeth (drug) (febrile)

(o) Deformed dental arches (most generally constricted)

(p) Lingual axial inclination of alveolar process and teeth

(q) Crowding of teeth

(r) Openbites, anterior and posterior, bilateral and unilateral and supereruption of posterior teeth

(s) "Adenoid openbite" — maxillary anterior overjet and anterior openbite (adenoid, tonsillar and adenoid enlargement, pharyngeal laryngeal obstructions, tracheotomy, turbinate enlargement, septal deformity, tumors

and cysts or polyps, injuries or fractures)

(t) "Tonsillar openbite" — infraeruption of lower anterior teeth and supereruption of posterior teeth "bent" look to the mandible, antegonial notching, tonsillar enlargement

(u) Crossbites, anterior and posterior, bilateral and unilateral

(v) Overjets, anterior and posterior

(w) Angle Class II and Class III malocclusion, most common

(x) Severe narrowing of maxilla "high palates hard to clean"

(y) Dual bite

(z) "Ankylosis" of primary or permanent teeth

(aa) Depressed or suppressed bicuspid unilateral or bilateral

(bb) Immobile soft palate appears not to move in enlarged adenoid and tonsillar cases

(cc) Inflammation in region of palatoglossus and palatopharyngeus mm. and base of tongue

(dd) Hypertrophied palatal tissues due to "negative pressure" of tongue or no tongue during swallowing

(ee) "Suction streaks" in posterior palate

(ff) Clinically enlarged, inflamed or swollen turbinates and nasal tissues

(gg) Clinically deformed, or enlarged nasal septum



Figure 4b

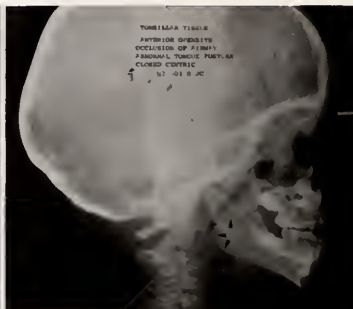


Figure 4c

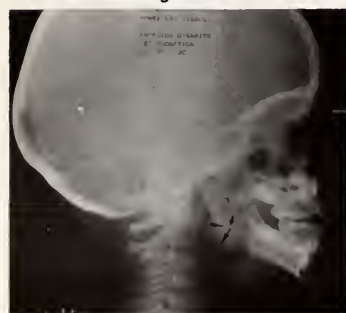


Figure 4d

Case #4. Deformity of the face jaws and dentition caused by a tonsillar and nasal obstruction, illustrates only the initial diagnostic material, but emphasizes the importance of oriented AP radiographs for proper diagnosis. Anterior openbite, end to end posterior bite, improper tongue posture (thrust). Age 3 months enlarged tonsils, severe anterior openbite, improper tongue posture and cervical deformity. (Fig. 4a) Age 6 yrs. Angle Class III cusp relationship, anterior openbite (tonsillar) depression of lower anterior teeth, improper posture of the tongue (low and forward), "bent" appearing mandible, mandibular prognathism, "fish like" appearance and enlarged tonsils. (Fig. 4b) [i] phonation to better demonstrate enlarged tonsils by elevating soft palate. (Fig. 4c) Oriented AP radiograph, deviation of mandible (unilateral mandibular prognathism), constriction of the maxilla, nasal cavities and dental arch, deformity of the nasal septum with deviation to the left, and enlarged turbinates (inferior) on the left side especially. (Fig. 4d)

3. Speech Impediments

(a) Retrognathic lisp (overjet)

(b) Prognathic lisp

(c) Lisp due to high palatal vault (alveolar bone constriction)

(d) Lisp due to openbite, articulation errors

(e) Hypernasality due to enlarged tonsils

(f) Hyponasal (oral sounding-stuffiness) nasal and nasopharyngeal obstruction

(g) Lisp due to drooling (inability to swallow and breathe properly at the same time)

4. Allergic Symptoms

(a) Sniffing

(b) Itching of eyes and soft tissues

(c) Wheezing

(d) Asthma

(e) Redness of eyes and periorbital tissues

(f) Dennie's lines

5. ENT Symptoms

(a) Colds-frequent

(b) Sore throats or infections

(c) Ear aches or infections

(d) Severe cases — loss of hearing

(e) Post nasal drip

- (f) Runny nose
- (g) Nasal congestion
- (h) Allergies
- (i) Allergic rhinitis
- (j) Runny eyes
- (k) Frontal headaches
- (l) Sinusitis

6. Breathing Symptoms

- (a) Mouth breathing
- (b) Heavy breathing
- (c) Difficulty in breathing while swimming
- (d) Difficulty in breathing while eating
- (e) Tongue held forward
- (f) Snoring
- (g) Snorting
- (h) Wheezing — hack and cough "loud sleeper"

- (i) Bronchial congestion URI
- (j) Drooling (white color on lips)
- (k) Claustrophobia feeling (while lying back especially)
- (l) More difficult to breathe in prone position due to increased size of tissues from blood and fluid due to gravity

- (m) "Pillowing" (adding pillows to elevate head) for more comfortable breathing while lying down

- (n) Preferred body posture while sleeping

- (1) Sleep with open nasal cavity down with unilateral nasal occlusion

- (2) On back with head tilted back or with neck curved to side of "easiest breathing"

- (o) Eating problems

- (1) "Noisy eater," chewing food with mouth open, drooling while eating, smacking lips (inability to breathe through nose *properly* while swallowing)

- (2) Feeling of choking while eating—have to spit food out

- (p) WITH THE LITTLE KNOWLEDGE THAT IS COMMON TO "CRIB DEATH" OR THE "SUD-DEN INFANT DEATH SYNDROME," THE INABILITY TO BREATHE "PROPERLY" MAY BE A CONTRIBUTING FACTOR

7. Temporomandibular Joint Syndrome

- (a) Unilateral or bilateral, popping, clicking, crepitus, squeaking, locking in or out

- (b) Dual bite

- (c) Pain in sternocleidomastoid muscle from cervical curvature

- (d) Frontal headaches, sinusitis, pain on side of head

- (e) Pain on palpation of mm of mastication

- (f) Malocclusion of teeth, premature

loss of teeth, crossbites, overbites, premature contacts, overeruption of teeth

B. Radiographic History for Airway Interference Diagnosis

1. Oriented Lateral Radiographs Reveal the Following Information:

- (a) Anteroposterior discrepancy of maxilla to mandible

- (1) Prognathic

- (2) Retrognathic

- (b) Anterior openbite

- (c) Anterior overbite

- (d) Posterior openbite

- (e) Vertical relationship of the mandible to the maxilla

- (f) Lingual axial position of anterior-mandibular alveolar process and incisors

- (g) Protrusion or retrusion of anterior teeth

- (h) Tongue position

- (1) Enlarged tonsil—tongue displaced forward increasing distance from pharyngeal wall to tongue

- (2) Enlarged adenoid—tongue down and forward

- (Both cause space between dorsum of tongue and soft palate radiographically)

- (3) Tongue held between teeth (creates openbite)

- (i) Soft palate

- (1) Enlarged tonsils force palate dorsally causing hyponasality

- (2) Enlarged adenoid tissue or nasal obstruction causes palate to be flaccid giving flat appearance and displaced forward

- (j) Cervical curvature/lordosis

- (k) Enlarged adenoid tissue

- (l) Mandibular asymmetry

- (m) Polyps or cysts

- (n) Dense nasal structures (turbinate)

- (o) Protrusion of turbinates through posterior nares or choanae

- Lateral "i" phonation radiographs provide better view of tonsillar tissue*

2. Oriented AP Radiograph

- (a) Craniofacial asymmetry (and other structures)

- (b) Mandibular and maxillary asymmetry

- (c) Narrowed maxilla and nasal structures and nasal cavity asymmetry

- (d) Palatal asymmetry

- (e) Septal deformity and deviation

- (f) Enlarged turbinates

- (g) Polyps, cysts or other aberrant tissue

- (i) Crossbite of dentition

3. Panoraphic Radiograph

- (a) Cysts or polyps or other aberrant tissue

- (b) Septum, turbinate and nasal cavity

It is considered to be ABSOLUTELY ESSENTIAL that radiographs are ORIENTED to obtain the proper views. Slight rotations can present a TOTALLY INACCURATE observation.

C. Examination Procedures for Breathing Capabilities

1. Complete general physical history concerning numbers of colds, sore throats, number of respiratory infections, infections of ears, allergies, itching nose, nose habits, breathing habits, reaction to stings or bruises, medical history and history of family regarding breathing or allergy problems.

2. Posture For Testing Breathing Capabilities

- (a) Upright—standing or sitting

3. Method of Evaluating Nasal Structures

- (a) Vasoconstrictors should not precede examination

- (b) Speculum

- (c) Adequate light

- (d) Nasopharyngeal mirror

- (e) Lateral and AP radiographs — supplements

4. A Clinical Method of Evaluating Usual Breathing Capabilities In An Upright Position—(Quinn)

- (a) Clamp mouth lightly with thumbs and index fingers

- (1) Alternate closing one nostril at a time

- (b) Maintain closure over prolonged period

- (1) Watch chest and stomach breathing

- (2) Watch eyes and facial expression for fear, surprise or apprehension

- (c) Ask patient whether or not it is harder to breathe with the mouth clamped shut and one nasal cavity at a time—which side is harder

5. It is Totally Inaccurate to Evaluate Breathing Capabilities by Introducing a Soft Tissue Reducing Agent (Vasoconstrictors, Cocaine) Before the Clinical Testing

(a) Soft Tissue Reducing Agents Contribute to the Evaluation of Living Bony Anatomical Structures

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THE EFFECT OF DURATION AND TECHNIQUE OF TOOTHBRUSHING ON THE ORAL HYGIENE OF THIRD GRADE STUDENTS

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F. Thomas McIver, D.D.S., M.S.
Dennis Stacey, PhD.

The purpose of this study was to investigate the oral hygiene improvement among subjects brushing for different time periods and using different toothbrushing techniques. The study was conceived because recent studies suggested that the roll method was not necessarily the most effective technique, despite being widely recommended.

Numerous studies and descriptions of toothbrushing methods have been reported in literature.¹⁻¹² However, very little has been reported regarding an optimal amount of time for brushing.^{7,9,17,18} Several questions were addressed in this study: (1) Among the toothbrushing techniques determined to be the most commonly used by children, what is the most efficient technique for the third grader? (2) Can an instruction as simple as "Brush for three minutes" result in improved plaque removal for third grade children? (3) How does the efficiency of cleaning anterior and posterior teeth differ with brushing technique and duration of brushing? (4) How does the efficiency of cleaning facial and lingual tooth surfaces differ with brushing technique and duration of brushing? (5) How does efficiency of cleaning proximal tooth areas differ with brushing technique and duration of brushing?

Pilot Study

Method

A pilot study of twenty third grade patients of the University of North Carolina School of Dentistry was conducted to determine: (1) the range of brushing times for these third grade students, (2) the prominent brushing method used by these third grade stu-

dents, and (3) the reliability of the plaque score ratings of the examiner using the PHP-M method.¹⁹

Principal Study

Sample

The final sample for this study was taken from a small elementary school in the small, rural town of Dunn, North Carolina. The sample consisted of 72 randomly selected third graders, eight and nine years old, who had been granted parental permission to participate in the study.

Measures

Using the PHP-M method of rating tooth plaque, the facial and lingual surfaces of teeth 3, C, J, 19, M, and S were examined for each subject before and after toothbrushing instruction. If a tooth to be examined was missing, the next most posterior tooth was chosen (unless a permanent tooth was replacing C, J, M, or S, in which case the permanent tooth was scored). If a posterior tooth was not present, the closest anterior tooth was chosen. The scoring was accomplished by first visu-

ally dividing each surface into five areas. (See Figure 1) Each area was scored 0 to 1 according to whether plaque was present or not. The highest possible plaque score for each subject was 60.

Experimental Design and Procedure

The sample was divided into nine groups of eight subjects each, corresponding to the nine conditions defined by type and duration of brushing. The three methods of brushing were (1) the scrub — which was determined in the pilot study to be the most prevalent method used by third graders, (2) the roll — which is often prescribed for such children, and (3) a "no-instruction" control group — which was observed in the pilot study to predominantly practice the scrub technique. The three time periods allotted for brushing, determined in the pilot study to effectively span most of the times spent in brushing by third graders, were: (1) 30 seconds, (2) one minute 45 seconds, and (3) three minutes.

In random order, each group was instructed in one of the methods of brushing, and asked to brush for the duration of one of the three time periods. Brushing took place in an isolated area of the school where each subject had his own sink. The instructions were standardized and given by a graduate dental hygiene student. A large model toothbrush and large model teeth were used as props to illustrate each of the two brushing methods. The "no-instruction" group was simply asked to "take the toothbrush and clean your teeth at the sink." The instructor demonstrated the passage of 30 seconds on a timer to each group before they began brushing. The 30 seconds group was told "this is how much time you have to brush." The one minute 45 seconds group was told they would have about

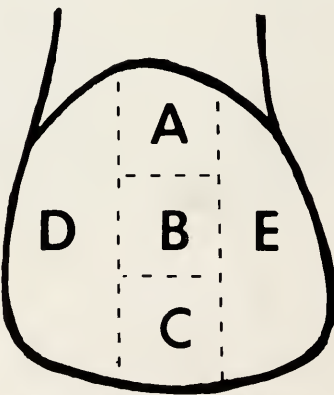


Figure 1: Surface area divisions used in the PHP-M scoring technique.

This research was completed as partial requirement for the Masters of Science degree in Pedodontics by Jasper L. Lewis, Jr., D.D.S., M.S.

three times the time demonstrated, and the three minute group was told they would have about six times the amount of time demonstrated. No subjects were able to observe the clock during brushing. All brushing activity was stopped at the sound of a loud buzzer. The brushing was monitored by the instructor to insure that brushing was continuous.

Without knowledge of the experimental condition to which a subject belonged, oral hygiene was evaluated by the senior author whose scoring technique was demonstrated to be consistent with that of another dentist rater during the pilot test. The difference between before and after brushing scores for each tooth, surface, and area, as well as the total score was determined from each subject's score sheet. Difference or change in oral hygiene was determined by subtracting the after brushing scores from the before brushing scores in each case (hereafter referred to as plaque change scores).

The data collected was analyzed using a non-parametric analysis of variance technique.²⁰ The technique provides for a distribution-free test of the hypotheses which, given a larger sample size, would otherwise be tested using a conventional parametric analysis of variance. Plaque change scores above and below the median for any one condition served as the basis for the analysis. Scores equal to the median were included in the below-the-median group of scores, unless the excessive number of such scores warranted their deletion from the analysis.

Results

Before the findings are presented, it should be stated that rater error (i.e., a surface area being scored for plaque before but not after brushing) for this study was very small. Only 0.9 percent of surface areas were so rated, and these were fairly evenly distributed over tooth positions, surfaces, and areas.

The major analysis revealed no significant differences among the brushing techniques when all teeth and surfaces were considered irrespective of designated time periods for brushing (i.e., when considering plaque change scores for all three time periods combined). However, with regard to the duration of brushing and when certain teeth and surfaces were analyzed, the following findings emerged:

- (1) Improvement in overall tooth

cleanliness as a function of duration of toothbrushing was significant at a probability less than 0.01; oral hygiene improvement was greatest for the 3 minutes group, followed in order by the 30 seconds and 1 minute 45 seconds groups. Through followup analyses, it was determined that the significant "duration of brushing" effect was not attributable to sex and race differences on the part of the subjects.

- (2) Regardless of toothbrushing technique, facial surfaces were found to be cleaned significantly better than lingual surfaces, especially for anterior teeth.
- (3) When improvement in interproximal tooth cleanliness as a function of toothbrushing technique was examined (evaluating teeth 3, C, A, 19, and M), the roll method was shown to clean least effectively. (3).

Discussion

Though no significant differences were observed among the techniques when all tooth surfaces were considered collectively, there were several interesting findings concerning duration of brushing and tooth surface areas cleaned.

Three minutes spent in brushing was found to yield significantly cleaner teeth than the other two time periods. Unexpectedly, the 30 seconds time period yielded cleaner teeth than did the one minute 45 seconds time period. This was possibly due to the intensity of brushing by the subjects in 30 seconds group, who may have realized that they did not have long to brush. The one minute 45 seconds group may have been lulled into false sense of security as time expired, and may never have reached a terminal phase of intensive brushing as described by Lefkowitz and Robinson.⁹ Apparently, three minutes of brushing is long enough to either permit an intensive brushing phase to be reached, or enough tooth surfaces to be cleaned at a more moderate pace.

The fact that facial surfaces were cleaned better than lingual surfaces demonstrated that cautioning subjects as to the difficulty of cleaning lingual surfaces did not overcome the usual tendency to fail to clean these surfaces. It is interesting to note that the facial surfaces of the anterior teeth emerged as the cleanest areas in the mouth, regardless of technique employed.

Regardless of brushing technique, posterior teeth were cleaned better after instruction. However, it was found that instruction did not significantly improve the cleaning of anterior teeth.

The finding that the roll technique yielded less plaque reduction than a more scrub-like technique may be due to the greater effort required for roll, and to the less deep proximal embrasures found between primary teeth compared to those between permanent teeth. The mesio-distally directed scrub technique may have been adequate to clean the shallow embrasures between primary teeth; but the roll method of brushing may be more effectively used in the permanent dentition rather than the mixed dentition encountered among the subjects of this study.

Summary

Significant differences in plaque removal as a function of toothbrushing techniques were not observed, except when the interproximal areas of designated teeth were examined. Here, the roll method resulted in less oral hygiene improvement than either a deliberate or less systematic scrub method. It was discovered that third graders brushing for three minutes can significantly improve their oral hygiene. Anterior teeth were cleaned better than posterior teeth, and the facial surfaces of anterior teeth were cleaned best of all. Finally, after receiving toothbrushing instruction with emphasis on cleaning lingual surfaces and posterior teeth, third graders using the scrub or a modified scrub technique (the technique they naturally use) can effectively reduce tooth plaque in their mouths.

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(Continued on page 64)

Reactions to Local Anesthetics

Harold W. Mohorn, D.D.S., M.S.*†

Man has a natural fear of pain and has sought an effective method to rid himself of this objectionable sensation since the beginning of time. His efforts were, at first, directed toward the supernatural to obtain relief. As this technology advanced, he found more scientific methods to alleviate pain. Prior to the 19th century, man relied on pseudo-anesthesia produced by the opiates and alcoholic beverages to render him partially insensible to pain.²¹

In the middle of the 19th century, Horace Wells, Crawford Long, and William Morton used and demonstrated the usefulness of inhalation anesthesia. In 1862, Schraff discovered the local anesthetic effect of cocaine hydrochloride. This drug proved to be quite effective as a topical anesthetic, but it was found to render too many toxic reactions when used as an injectable anesthetic.² The undesirable side effects of cocaine stimulated investigators to seek new local anesthetic agents which would prove to be less toxic and non-habit forming. It was soon concluded that a benzoic acid derivative could be combined with a basic alcohol to form an organic salt, or ester, which would have local anesthetic properties. The synthesis of procaine in 1905 by Alfred Einhorn was the great scientific breakthrough which led to local anesthesia as we know it today.²¹ Since Einhorn's contribution, many local anesthetics of varying toxicity, potency, and effectiveness have been introduced.

The intent of this paper is to present those factors that play a role in producing unfavorable reactions attributed to local anesthetics. More emphasis will be placed on the prevention, cause, and manifestations of the adverse reactions rather than the treatment of these reactions. The discussion will exclude, for the most part, those anesthetics

that are used mainly for topical anesthesia.

It is interesting to note the comments of Harold N. Wright³⁹ on the average mortality rate for operations under local anesthesia. He said that the best available figures (1955) indicate an average mortality rate of about 1:5000 for all operations under local anesthesia. He pointed out, however, that the mortality rate in dental anesthesia is much less than 1:5000 but is not known with any exactness.

Any drug administered that is physiologically active in the body has a potential for causing unfavorable reactions. The local anesthetic is no exception. Ostrander³⁹ stressed this point as he said, "All local anesthetic solutions are toxic, and the dangerous dosage will vary markedly from patient to patient." He also reported that there can be variations in toxicity from injection to injection in the same patient.

The toxicity, as well as the potency, of a local anesthetic solution is related to its chemical configuration. Sometimes two different anesthetic solutions with the same basic core in their chemical formulas will produce the same adverse reactions, whereas the use of another anesthetic of a different chemical structure may well be entirely uneventful.²¹ For this reason and for the sake of discussion, the following chemical grouping is presented:^{2, 15, 25}

- I. Benzoic acid esters
 - A. Piperocaine (Metycaine)
 - B. Meprylcaine (Oracaine)
 - C. Isobucaine (Kincaine)
- II. Para-aminobenzoic acid esters
 - A. Procaine (Novocain)
 - B. Tetracaine (Pontocaine)
 - C. Butethamine (Monocaine)
 - D. Propoxycaïne (Ravocaine)
 - E. 2-Chloroprocaine (Nesacaine) or (Versacaine)
- III. Meta-aminobenzoic esters
 - A. Metabuthamine (Unacaine)
 - B. Metabutoxycaine (Primacaine)
- IV. Para-ethoxybenzoic acid ester—

Diethoxin (Intracaine)

- V. Cyclohexylamino-2 propyl benzoate—Hexylcaine (cyclaine)
- VI. Anilide (Nonester type)
 - A. Lidocaine (Xylocaine)
 - B. Mepivacaine (Carbocaine)
 - C. Pyrocaine (Dynacaine)

Factors That Affect the Plasma Level

The toxicity of a local anesthetic, in the final analysis, depends on its plasma concentration.^{25, 21, 4} This statement, of course, doesn't include all of the reactions considered as allergic reactions.

A. Vascularity and Rapidity of Injections

One of the most important factors that govern the plasma concentration is the vascularity of the area in which the anesthetic solution is injected. The oral tissues are extremely vascular, and thus the anesthetic solution is more readily absorbed into the blood stream as compared to a less vascular area of the body.^{26, 18, 34} Inflamed areas are usually more vascular, and these areas should be avoided whenever possible.^{26, 18}

The rapidity of the injection is another factor that influences the plasma level.² Rapid injection causes increased absorption of the drug irrespective of the vascularity of the area, and this increases the toxic potential of the local anesthetic.²⁵ Adriani, Campbell, and Yarberr³ found that a rapid injection of tetracaine in a dog produced respiratory paralysis, but slow infusion of an equal dosage caused no reaction.

B. Dosage

In general, the larger the volume and the more concentrated the solution, the more rapid will be the development of a high plasma level.⁹ Sadove and his colleagues²⁶ reported that the toxicity of a local anesthetic solution increased in geometrical, not arithmetical, progression with increased concentration. Thus, while a given amount of a one

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percent solution would be four times as toxic as the same quantity of a 0.5 percent solution, a two percent solution would be approximately 16 times as toxic as an equal amount of a 0.5 percent solution. Monheim²⁵ said that excessively high concentrations may have a neurolytic effect to say nothing of the increased possibility of a toxic reaction.

The logic that concludes that if a small volume is good a larger volume will be better does not hold true in regard to local anesthetic drugs. Cherasikin and Brunson⁹ found that induction time, depth, extent, and duration of anesthesia are enhanced the smaller the total volume of injected solution for a given dosage of the drug.

Most authors agreed that one should use the least possible volume and concentration needed to secure satisfactory anesthesia.

C. Intravascular Injections

The hazards of inadvertent intravascular injections of a local anesthetic was recognized by most authors.^{20, 30, 27, 21, 24} The reason becomes apparent when one considers that the toxicity of a local anesthetic is related to its plasma concentration.

Hiatt²¹ said that intra-arterial injections are approximately four times more toxic than interstitial injections, and intravenous injections are believed to be about 16 times more toxic than interstitial injections.

Depending upon the site, intraoral injections are likely to be intravascular about two to six percent of the time if ordinary nonaspirating cartridge syringes are used.¹⁹ Harris²⁰ reported on 8,534 aspirations carried out at the Northwestern University Dental School and found the over-all incidence of entering the vascular bed, for all types of injections, was 3.2 percent. All-glass syringes of the Luer type were used.

Schiano and Strambi²⁷ reported in 1964 on the frequency of aspirating blood in 2,401 injections. They used a cartridge-syringe system that facilitated the practice of aspiration. Positive aspiration of blood occurred in four percent of all injections. This finding was compatible with Harris' 3.2 percent. They varied considerably, however, in their results on positive aspirations in the mandibular block. Schiano and Strambi found this to be the site where the most frequent positive aspirations occurred (11 percent), while Harris found only 3.6 percent.

I: Percentage of Subjects in Whom Circulatory and Respiratory Changes Occur After I.V. Infusion of Local Anesthetic Agents

Agent	Pulse Rate			Blood Pressure			Respiratory Rate			Electrocardiographic Changes	
	↑	↓	—	↑	↓	—	↑	↓	—	Present	Absent
Procaine HCL	80	10	10	50	30	20	50	10	40	80	20
2-Chloroprocaine HCL	42	16	42	33	8	59	59	0	41	41	59
Tetracaine HCL	70	0	30	30	10	60	30	30	40	30	70
Lidocaine HCL	80	10	10	90	0	10	30	40	30	30	70

(↑) —Increased
(↓) —Decreased
(—) —No change

Foldes and his colleagues¹⁶ injected intravenously four anesthetic solutions into 12 unanesthetized human subjects. The concentration of the local anesthetics was adjusted so that 4 mls. contained 1 mg. of procaine HCL, 1 mmg. of chloroprocaine HCL, 0.5 mg. of lidocaine, or 0.125 mg. of tetracaine per kilogram of body weight. After the discontinuation of the infusion, the toxic reactions disappeared more rapidly with chloroprocaine and more slowly with lidocaine hydrochloride. The low systemic toxicity of chloroprocaine hydrochloride was attributed to its rapid enzymatic hydrolysis in plasma. The dangers of intravenous injections were also magnified by the circulatory and respiratory changes that occurred. These changes are indicated in chart I.

Adriani and Campbell¹⁴ studied the blood level of tetracaine in a dog after administering the drug four different ways: Rapid intravenous (30 mg.); topical 2 percent (30 mg.); slow intravenous (30 mg.); and subcutaneous infiltration (30 mg.).

The rapid injection of 6 mg. per kilogram of body weight of tetracaine intravenously resulted in peak levels of 100 mcg. or more per milliliter in the circulating blood within one to two minutes. The same quantity applied to the mucous membranes of the pharynx resulted in peak levels of 30 mcg. per milliliter. The peak level obtained by slow intravenous injection was low, and the subcutaneous infiltration of 30 mg. of solution reached the lowest peak of all.

Ostrander³⁰ pointed out that some anesthetic agents are sometimes more

than 10 times as toxic intravenously as when injected in the tissues. He demonstrated in chart II the variation in the LD 50 (amount necessary to kill 50 percent of the experimental animals used) for four anesthetic solutions when injected intravenously, intraperitoneally, and subcutaneously.

The Council on Dental Therapeutics² made two points that should minimize untoward reactions of local anesthetics: "(1) Prevent intravascular injections by attempting to aspirate blood before injection. No smaller than a 25 gauge needle should be used as smaller needles often prevent aspiration. (2) Use sharp needles and inject the solution slowly."

D. Physical Condition

Another important factor to consider in deciding the amount of drug to be administered is the patient's general physical condition. Monheim,²⁵ Ostrander,³⁰ Adriani,³ and others listed this as an important factor that influences the toxicity of a local anesthetic. Sadove and his colleagues²⁶ reported that there is an average dose by weight for each drug. They believed this dose should be adjusted to the patient's physical status, age, state of nutrition, and other factors affecting his metabolic state. In the aged, debilitated, or shocked patient, or in others with a low metabolic rate or decreased body mass, the dose of the drug should be reduced. It has been shown in animal studies that starvation and ascorbic acid deficiency increases animal susceptibility to procaine convulsions.²⁶

Ritchie, Cohen, and Dripps¹⁷ indi-

II: LD 50—s.e. (mg./kg.)

Route	Ravocaine HCL	Lidocaine HCL	Procaine HCL	Tetracaine HCL
Intravenous	7.3 ± 0.3	23.1 ± 2.3	56 ± 3	7.6 ± 0.4
Intraperitoneal	90 ± 9	130 ± 11	230 ± 8	75 ± 4
Subcutaneous	70 ± 7	200 ± 20	660 ± 60	48 ± 3

cated that extensive use of a local anesthetic in patients with severe liver damage should perhaps be avoided since the liver plays a big part in the metabolic breakdown of local anesthetics.

Adriani reported that detoxification of local anesthetics may be retarded in patients with hepatic dysfunction, toxic goiters, severe anemias, and diseases caused by inadequate nutrition.

E. Vasoconstrictors

Most injectable local anesthetics used today are not vasoconstrictors. That is, they do not constrict the arterioles which regulate the flow of blood through the capillaries of the injected tissue. On the contrary, all local anesthetics used in dentistry today, with the possible exception of xylocaine, carbocaine, and monocaine are vasodilators. As such, they would be absorbed rapidly into the general systemic circulation, thus increasing the possibility of a toxic overdose.⁵ The addition of a vasoconstrictor not only restricts the local anesthetic to the injected tissue, thus decreasing the possibility of a toxic overdose, but its action also enhances the depth and duration of anesthesia.^{3, 9, 13}

Some writers have advocated that vasoconstrictors in local anesthetics should be avoided in patients with hypertension and cardiac abnormalities because of their effects on the vascular system. Bloom⁷ reported in 1934 that epinephrine is contraindicated in patients with aortic regurgitation, mitral insufficiency, arteriosclerosis, exophthalmic goiter, and hypertension. Hickey²² believed that cardiac complications such as cardiac pain or coronary thrombosis are caused by the vasoconstrictor in the anesthetic solution.

Current concepts tend to refute the notion that a vasoconstrictor in moderate amounts is harmful to a cardiac patient. The New York Heart Association⁶ has recommended that not over 10 ml. of 1:50,000 epinephrine (0.2 mg.) be used at any one appointment when treating a cardiac patient. The New York Heart Association, however, did recommend the use of a local blocking agent with a vasoconstrictor below this limit. The Association advised the use of a vasoconstrictor because it enhances the depth and duration of anesthesia and thus prevents pain. Pain results in an increase in epinephrine production from patients over the sympatho-adrenal system in amounts up to three times the permis-

sible injectable dosage. The American Dental Association and the American Heart Association²⁴ agreed that a vasoconstrictor should be used in the local anesthetic for cardiac patients.

Dick¹¹ reported that there is good reason to doubt that vasoconstrictors in dental local anesthetics have caused any fatalities, despite the widespread use of such solutions on all kinds of patients. He reported that in the few cases where local anesthetics have caused death the anesthetic drug was perhaps responsible rather than the vasoconstrictor.

Varnale,³⁵ in investigating the possible pressor and other cardiovascular effects of the injection of a two percent solution of lidocaine with and without epinephrine 1:100,000, concluded that local anesthetic solutions containing therapeutic amounts of epinephrine can be used without fear of complications in patients with hypertension.

The vasoconstrictors used with local anesthetic solutions follow:

III

Official Name	Trade Name	Optimum Concentration With 2 Percent Procaine
Epinephrine, U.S.P.	Adrenalin-Suprarenin	1:50,000 to 1:70,000
Levarterenol, U.S.P.	Levophed	1:30,000 to 1:40,000
Nordefrin, N.F.	Cobefrin	1:10,000
Levonordefrin	Neo-Cobefrin	1:20,000
Phenylephrine, U.S.P.	Neo-Synephrine	1:2,500

Ostrander⁵⁰ reported that all of these agents appear to be acceptable as vasoconstrictors in local anesthetic solutions. He pointed out that there are minor differences. Epinephrine is said to be the most effective of the group but tends to produce more minor side effects. It should be noted, however, that the optimum concentration for epinephrine is much less than for the other four vasoconstrictors. Thus, if the 1:50,000 concentration is not exceeded, side effects will be infrequent and usually minor.

Bishop, Dorman, and Matthews⁶ reported that systemic reactions following the injection of local blocking agents containing epinephrine may result in nervousness, headache, nausea, respiratory embarrassment, cardiovascular dysfunction, and rash. They pointed out that these reactions may result entirely from psychic influences. They reported that true toxic reactions from epinephrine occur only when the blood concentration is excessively elevated or if the patient is unusually sensitive to this compound.

Levarterenol is thought to be the best pressor agent of the group but ap-

pears to be a less effective vasoconstrictor than an equal weight of epinephrine.^{30, 2} Monheim²⁵ reported that systemic effects of increased volume may produce reactions similar to those of epinephrine but usually less marked. He advises against using Levophed or epinephrine in hyperthyroid patients. Bishop, Dorman, and Matthews⁶ said that, compared to epinephrine, Levarterenol is much less active in increasing the heart rate and increasing the blood sugar level.

Nordefrin has been reported to be less effective than epinephrine in raising blood pressure in animals and has a lower systemic toxicity.²⁵ Bishop, Dorman, and Matthews⁶ believed that Nordefrin affects the central nervous system considerably less than epinephrine and thus symptoms such as nervousness occurred less frequently. Drill concurred with Bishop, Dorman, and Matthews.³¹ Levonordefrin has less systemic toxicity than epinephrine which is thought to be due to the fact

that it is less effective than epinephrine in contracting blood vessels and raising blood pressure.²

Phenylephrine (Neo-synephrine) is thought to be considerably less toxic than epinephrine and one-sixth as active as a pressor agent. Bishop, Dorman, and Matthews⁶ reported that phenylephrine differs from epinephrine in the following ways: (1) myocardial stimulation rarely occurs, (2) both systolic and diastolic blood pressures are elevated, and (3) pulse rate is decreased owing to reflex activation of the cardioinhibiting center, by way of the aortic and carotid depressor nerves.

Monheim²⁵ reported that phenylephrine doesn't markedly affect the central nervous system and was the weakest of the vasoconstrictors. Because of its weakness, it is used in concentration 10 to 20 times that of epinephrine. He reported further that cardiac arrhythmias are less likely to occur with Neo-synephrine, as it has a tendency to decrease the heart rate rather than increase it.

Adriani, Campbell, and Yarberry³ studied the influence of absorption on

systemic toxicity of local anesthetic solutions using a dog as a subject. They used various vasoconstrictors in the study and found that by the addition of 1:100,000 epinephrine to procaine, injected subcutaneously, systemic toxicity is decreased up to 30 percent. Norepinephrine was found to be nearly as effective as epinephrine but caused sloughing and necrosis of tissue. Phenylephrine was found to be less effective and larger doses were required to produce vasoconstriction.

Holroyd and Watts²³ studied the production of edema in rats by injecting small quantities of local anesthetic solutions subcutaneously. Certain local anesthetics did produce edema, but the production of edema was determined to be the anesthetic solution and not the vasoconstrictor or preservatives contained therein. The vasoconstrictor, however, is probably not completely innocent of local adverse effects. The Council on Dental Therapeutics² stated: "Although systemic toxicity of local anesthetics is reduced by including vasoconstrictors, the local irritation may be increased."

Although the vasoconstrictors used in local anesthetic solutions vary in their potential to produce toxic reactions, their toxicity is mostly related to their concentration in the anesthetic solution and the total dose administered. Basing one's judgment on recent studies, it is difficult to reject or advocate the use of any one particular vasoconstrictor as far as its potential toxicity is concerned.

The Council on Dental Therapeutics² stated further: "There is not adequate evidence, at present, to indicate the superiority of any one of the vasoconstrictor agents when employed in physiologically equivalent concentrations in anesthetic solutions. Generally, variations between individual patients are so great as to make detection of any difference impossible in office practice."

F. Detoxification

The accumulation of toxic quantities of a local anesthetic in the blood stream is much less likely to occur if the anesthetic agent is destroyed rapidly than if it is destroyed slowly. Therefore, the rate of hydrolysis or elimination by other mechanisms is of great importance because it is one of the determining factors of the concentration of the anesthetic in the plasma, and thus its toxicity.¹³ There is a great variation in the rate at which the vari-

ous local anesthetics are destroyed and this, of course, is one of the major factors in determining the safety of a particular local anesthetic agent.^{17, 16, 14}

Detoxification of most local anesthetics is accomplished mostly by the liver with some breakdown in plasma.^{3, 17} The local anesthetics of the para-aminobenzoic acid and the benzoic acid esters of various amino alcohols are hydrolyzed at a variable rate in a plasma enzyme and a liver enzyme. The enzymes liver esterase and plasma esterase (probably plasma cholinesterase) are thought to be responsible for the degradation of the local anesthetics.¹⁷ The non-ester type of local anesthetic, i.e., lidocaine, is not broken down in the plasma, and the breakdown in the liver is considerably slower.¹⁵ The unmetabolized portions of the local anesthetics are eliminated unchanged through the urine.³

Ritchie, Cohen, and Dripps¹⁷ reported that animals with experimentally produced liver damage are much more susceptible to the toxic actions of local anesthetics. For this reason, they concluded that the extensive use of a local anesthetic (especially drugs such as lidocaine) in patients with severe liver damage should be avoided.

Adriani³ reported that low levels of plasma "pseudo-cholinesterase" are found in patients with hepatic dysfunction, toxic goiters, severe anemias, and diseases caused by inadequate nutrition. He indicated that detoxification of local anesthetics may be retarded, and symptoms of systemic toxicity may appear in this type of patient.

That there is a great variation in the enzymatic breakdown of various anesthetic solutions was shown by Foldes and his colleagues.¹⁶ They investigated and obtained data from men on the relative toxicity of three commonly used local anesthetic agents hydrolyzed by plasma esterases (procaine, chlorprocaine, and tetracaine) and one other which is affected very little by these enzymes (lidocaine). The concentrations of the solutions were adjusted so that 4 mls. contained 1.0 mg. of procaine HCL, 1.0 mg. of chlorprocaine, 0.5 mg. of lidocaine, or 0.125 mg. of tetracaine per kilogram of body weight. The injections were given intravenously. The infusion of chlorprocaine was tolerated best and that of lidocaine the least favorable of the four compounds investigated. After discontinuation of infusion, the toxic signs disappeared more rapidly

with chlorprocaine and more slowly with lidocaine. The low systemic toxicity of chlorprocaine was attributed to its rapid enzymatic hydrolysis in plasma.

Systemic Effects of an Overdose

When the plasma concentration of a local anesthetic solution exceeds the tolerable level, adverse symptoms appear. The initial reaction is due to the stimulation of the central nervous system. Should the plasma level of the local anesthetic be high enough, cardiovascular and respiratory symptoms will be manifested.

Hiatt²¹ had divided the physiologic changes accompanying local anesthetic reactions into three phases:

Phase 1—The cerebral cortical stimulation is magnified by apprehension, excitement, and even convulsion in severe reactions. Cortical stimulation is eventually followed by a proportionate amount of cortical depression.

Phase 2—There is an increase in blood pressure, pulse rate, and respiration due to medullary stimulation.

Phase 3—Medullary depression results in a critical situation where the blood pressure, pulse rate, and respiration are decreased or possibly absent.

Foldes and McNall presented an excellent description of subjective symptoms and objective signs of systemic reaction in the following paragraphs.

Subjective symptoms, as a rule, are observed by the patient before the appearance of objective signs. These subjective symptoms in order of their appearance include anxiety, nervousness and the feeling "that something is wrong." Sometimes, especially after the use of lidocaine, the first symptom is not unlike that experienced after the consumption of a moderate dose of alcohol. Later the patient becomes confused, but at the same time he realizes that he is confused, and reports numbness of the face and the extremities or the whole body. Not infrequently, visual disturbances (e.g. blurring, diplopia or color blindness) develop, and the patient complains of feeling a lump in the throat, or heaviness in the chest. Occasionally, he also observes a sensation of twitching in the extremities or in the diaphragm before any objective sign of muscle irritability becomes evident. The objective signs related to the central nervous system toxicity of local anesthetics, in the order of their appearance and severity, are loquacity, disorthria, disarticulation, tachypnea, fasciculation (muscle

twitching), convulsions, loss of consciousness, and finally respiratory arrest.

Other symptoms related to the toxicity of local anesthetic agents include sweating, nausea, and vomiting.

Steinhaus³¹ reported that the local anesthetic action on the cardiovascular system is chiefly depressant. However, this system was said to be much more resistant than the brain, especially in the presence of adequate oxygenation.

The cardiovascular effects are usually seen only after a high plasma level, and the primary cardiovascular site of action is the myocardium. There is a decrease in electrical excitability, conduction rate, and force of contraction.¹⁷

On rare occasions, cardiovascular collapse and death occurred after a small amount of anesthetic was employed for infiltration anesthesia. Ritchie, Cohen, and Dripps¹⁷ believed that this was due to an action on the pacemaker or the sudden onset of ventricular fibrillation.

Williams and his colleagues³⁸ studied the electrocardiographic changes of 63 patients during oral surgical procedures under the influence of 1 to 2 cc. of 2 percent Xylocaine with 1:100,000 epinephrine. Of the 63 patients studied, 16 developed cardiac arrhythmias coincident with the anesthetic injection or the operative procedure. Selection of patients was without regard to age, sex, cardiovascular disease or other diseases. Only two of the 16 patients who developed a significant disorder of the heart beat were found to have clinically demonstrable heart disease. The authors reported that the mechanism responsible for the production of the various arrhythmias observed was not clear. It is interesting to note, however, that some (they did not say how many) developed arrhythmias coincident with the anesthetic injection.

Allergic Reactions

According to Walker,³⁶ an allergy is an antigen-antibody reaction which is manifested in a particular organ, usually the skin or mucous membrane. An allergy can be acquired or familial. In the former, the individual must have been sensitized previously to the particular drug or a similar compound. In the familial type, the individual has inherited the tendency to render an allergic response to some substance. It should be stressed that the individual doesn't inherit a specific reaction to a

particular drug, only the tendency to develop the allergy.

It has been estimated that only about one percent of all reactions occurring during local anesthesia are allergic in their origin.²⁵ The smallness of the percentage, however, should not make the doctor complacent since the reaction can be severe and sometimes fatal.

Criep¹⁹ has divided the allergic reactions to local anesthetics into the following categories:

1. contact dermatitis.
2. serum sickness pattern reaction.
3. accelerated serum-type reaction, and
4. atopic reaction.

Contact dermatitis is an allergic reaction that affects many dentists after having used a particular local anesthetic for some time. After becoming sensitized, subsequent contact with the local anesthetic may give rise to a localized, contact eczematous allergic dermatitis.²⁸ Hypersensitivity seems to occur more often in response to local anesthetics of the ester type and frequently extends to chemically related compounds.^{17, 28} When the dentist is confronted with this problem, he should consider using one of the local anesthetics of an entirely different chemical structure.³³

A study⁸ was published concerning the incidence of sensitization of 3,951 Navy dental officers who used procaine. The results showed that there were 85 instances of contact dermatitis out of the 3,951.

Serum Sickness pattern reactions occur after the administration of the drug for the first time. The time factor is quite variable in that the reaction occurs one to 12 days after the injection. The patient will usually have a slight fever, hives, joint symptoms, and general malaise. This reaction is usually well controlled by epinephrine and antihistamines. It is rare with a local anesthetic.^{28, 10}

Accelerated serum-type reactions (sometimes referred to as anaphylactic reaction) usually occur following the second or a subsequent injection of a local anesthetic. This type of reaction has a very rapid onset and is usually severe. Toogood³³ said that a reaction beginning later than 10 minutes after the injection is most likely not an anaphylactic reaction but could be. He also said that this reaction is more likely to occur in individuals with a history of hay fever, asthma, and other drug allergies. The symptoms include sudden development of urticaria with

severe pruritus, faintness, palpitation, tachycardia, weakness, sweating, dyspnea, cyanosis, fall in blood pressure, shock, and circulatory collapse.^{10, 15} This situation is critical, and the doctor should be prepared to administer treatment quickly (i.e., epinephrine, oxygen, and antihistamines).

Atopic Reactions—Certain individuals may be allergic by heredity to local anesthetic agents. These individuals are rare, however. Upon the first exposure to a local anesthetic drug, the patient may develop severe bronchial spasm, urticaria, or angioneurotic edema which may cause complete obstruction of the glottis. In this event the dentist should be prepared to administer succinylcholine and/or insert a large needle through the cricothyroid ligament into the larynx to facilitate breathing.^{15, 10}

Psychogenic Reaction

The dentist may often think that a reaction by a patient was due to a toxic level of the local anesthetic in the plasma when actually the patient experienced a psychogenic reaction. That some of these reactions are psychogenic is demonstrated by those patients who faint at the mere sight of the needle.²⁶

Monheim²⁵ thought that syncope was perhaps the most frequent complication associated with local anesthesia in the dental office. He described this as a form of neurogenic shock caused by cerebral anemia secondary to a vasodilatation or increase in the vascular bed with a corresponding drop in blood pressure. He stressed lowering of the patient's head (with the patient laid back in the chair) and administering oxygen as treatment.

The patient's emotional status should be evaluated before any suggestion of giving him an anesthetic. Should the patient be extremely nervous, the dentist should consider premedicating the patient. Ostrander³⁰ and Monheim²⁵ listed the patient's emotional status as a factor that influences the toxicity of the local anesthetic.

Sadove, Wyant, Gittelson, and Kretschmer²⁶ stressed the importance of the patient's mental attitude, his surroundings, and his confidence in the doctor as important factors in preventing psychogenic reactions.

Relative Toxicity

It was not the stated purpose of the writer to review the toxicity of each

individual local anesthetic. All of the factors mentioned thus far should be considered in choosing and administering a local anesthetic. A drug's toxicity depends on the manufacturer (sterility, concentration within limits, etc.), the doctor (dosage, aspiration, rate of injection, control of psychogenic reactions, etc.), the patient (allergic reactions, emotional state, physical state, detoxification, etc.), and, finally, the drug itself (rate of enzymatic breakdown, vasoconstrictor concentration, etc.). The anesthetic that is toxic for one patient may not be toxic for another. In the final analysis, the doctor must carry the burden of responsibility for any adverse reaction from any drug he administers. With these thoughts in mind, three charts will be presented that compare in a general way the toxicity of various local anesthetics.

Monheim²⁵ has presented a chart (IV) in which he compares several anesthetic solutions with novocain. He assigned novocain a toxicity of one. He did not elaborate as to what vasoconstrictors, if any, were used or how the data was obtained. The chart is presented as follows:

**IV: Comparable Toxicities and Dosages
Toxicity of Novocain Equals One**

Anesthetic Agent	Relative Toxicity	Maximum Dosage for Ambulatory Patients
Novocain	1	400 mg. (20 ml.)
Pontocaine	1	30 mg. (20 ml.)
Monocaine	1-	300 mg. (20 ml. of 1.5%) (15 ml. of 2%)
Metycaine	1.5	300 mg. (15 ml.)
Uncaine	1	570 mg. (15 ml.)
Ravocaine	2	30 mg. (7.5 ml.)
Oracaine	1	400 mg. (20 ml.)
Kincaine	?	— — —
Xylocaine	1.5	300 mg. (15 ml.)
Primacaine	1	300 mg. (20 ml.)
2-Chloroprocaine	0.5	800 mg. (40 ml.)
Intracaine	1	300 mg. (30 ml.)
Cyclaine	1.5	300 mg. (15 ml.)
Carbocaine	1.5	300 mg. (15 ml.)

Truant and Takman³⁴ presented a chart (V) showing the relative toxicity of various anesthetics as related to lidocaine which was assigned the number one. The data were obtained by intravenous injections in rabbits. It should be kept in mind that anesthetic solutions do not always respond the same in man as they do in experimental animals.¹⁷

In the following chart (VI), Ostrander³⁰ compared a number of the newer local anesthetic agents with two percent procaine:

V		
Generic Name	Proprietary Name	Relative Ratio Lidocaine = 1 (Toxicity I.V., rabbit)
Lidocaine	Xylocaine	1
Mepivacaine	Carbocaine	0.81
Procaine	Novocain	0.47
Propoxycaine	Ravocaine	2.4
Butethamine	Monocaine	0.77
Piprocaine	Metycaine	0.71
Chloroprocaine	Nesacaine	0.61
Hexylcaine	Cyclaine	1.1
Tetracaine	Pontocaine	4.3

VI	
Name	Toxicity
Uncaine	Less in tissues, Greater I.V.
Xylocaine	Greater
Carbocaine 2%	Greater
Dynacaine	Greater
Ravocaine 0.4%	Greater
with Procaine 2%	
Pontocaine 0.15%	Greater
with Procaine 2%	
Monocaine 1.5%	Similar
Primacaine 1.5%	Similar
Oracaine 2%	Similar or slightly greater
Kincaine 2%	Slightly greater
Versacaine 2%	Greater

Note: The above comparisons assume the inclusion of appropriate quantities of vasoconstrictor.

Summary

Local anesthetic solutions on the market today have been tested for their potency and potential toxicity as required by The Food and Drug Administration. For the most part, the concentration of the local anesthetic agent, the vasoconstrictor component, the PH, etc., in the various solutions have been adjusted to render them less toxic. There still exist, however, variations among the several local anesthetic solutions in their ability to produce toxic reactions as shown by the relative toxicity charts. The doctor should be cognizant of these variations but should also be aware of the many factors under his control that contribute to the toxic potential of a particular local anesthetic solution.

The more vascular the site of injection, the more readily is the local anesthetic agent absorbed into the blood stream.

Rapid injections cause increased absorption of the drug irrespective of the vascularity of the area, and this increases the toxic potential of the local anesthetic.

In general, the larger the volume and the more concentrated the solution, the more rapid will be the development of a high plasma level.

Intravascular injections are several

times more toxic than interstitial injections.

The physical condition of the patient should be considered in determining the dosage and type of local anesthetic used.

The addition of a vasoconstrictor to a local anesthetic solution not only restricts the local anesthetic to the injection site, thus decreasing the possibility of a toxic overdose, but its action also enhances the depth and duration of anesthesia. Current observations tend to refute the belief that vasoconstrictors (in moderate amounts) in a local anesthetic solution are harmful to a cardiac patient.

It has been estimated that only about one percent of all reactions occurring during local anesthesia are allergic in their origin, but these can be severe and sometimes fatal.

The patient's mental attitude, his surroundings, and his confidence in the doctor are important factors to consider in preventing psychogenic reactions.

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(Continued on page 64)

Current Concepts and Management of the Craniofacial Patient

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Severe congenital craniofacial anomalies have been recognized and described since the early years of this century.^{1,2,3} Only in the past ten years, however, has any significant progress been made in the correction of these severe malformations. In 1967 Dr. Paul Tessier presented a two stage surgical approach for the correction of hypertelorism.⁴ Subsequently, other surgical investigators have improved upon the technique⁵ and now many individuals and groups are actively involved in studying and treating other various anomalies involving the cranium, face and jaws.

Team Approach

The team approach is very important in the treatment of craniofacial anomalies.⁶ Interaction between plastic surgeons, neurosurgeons, orthodontists, oral surgeons, otolaryngologists, speech pathologist, family physicians and psychologists is a prerequisite to the proper care of the facially deformed. The surgical procedures required are necessarily of long duration and require the highest skills in administering anesthesia.

Since the inception of the Division of Orthodontics in 1958 there has been a trend to coordinate the efforts of the various disciplines in the treatment of many of the acquired and congenital anomalies of the face and jaws including cleft lip and palate, electrical burns, caustic burns, tumors, hemifacial microsomia, mandibular prognathism as well as mandibular hypoplasia. Many new diagnostic and treatment procedures have resulted from this long term team association.

Evaluation and Treatment Planning

The complexity of the problem and the reconstructive treatment requires the most careful planning. Each discipline must thoroughly examine and

evaluate the condition present and the findings are then evaluated by the term as a group and a treatment plan is designed.

Evaluation includes interviews and

discussions with the patient or parents and a thorough clinical examination. The clinical examination requires a carefully oriented radiographic study and in those cases involving the jaws



Figure 1-a. Preoperative



Figure 1-b. Postoperative

Figure 1. Teenager (age 18 years) with Hypertelorism before and after surgical correction
a. preoperative
b. postoperative

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and teeth oriented dental study models. The radiographic examination includes: oriented lateral and AP radiographs, panoramic radiographs, tomographic radiographs and supplementary radiographs as deemed necessary. Oriented dental study models and photographs are essential for proper diagnosis and treatment. Longitudinal or serial studies are most important for diagnosis and treatment planning and to accumulate knowledge on a long term basis since the results of this type of surgery are not yet well known on a long term basis.

Treatment

The principle of craniofacial surgery is the correction of severe deformities by radically restructuring the underlying skeletal framework while at the same time making the appropriate soft tissue changes. Acceptance of major craniofacial reconstructive surgical procedures has uncovered an even larger spectrum of facial anomalies.

Not all craniofacial deformities involve the dentition, however, most anteroposterior discrepancies of the face and jaws require postsurgical stabilization. The presence of teeth for anchorage is most essential for the optimal results. In cases that require stabilization most teeth need to be banded and orthodontic appliances placed. They are usually kept in place postsurgically for refinement of the surgical results. An interocclusal splint is prepared presurgically and wired in place at the time that the face is disarticulated surgically from the cranium.⁷ The jaws are usually wired together for a period of from six to eight weeks and usually some elastic forces are applied during the healing period which may range from three to six months or an indefinite period depending upon the age of the patient and the severity of the condition.

In most craniofacial deformities there is usually a constriction of the maxilla, obstruction or atresia in the nasal cavities which must be treated by surgery, expansion or both. The timing of treatment of the obstruction is dependent upon the severity of the condition.

Case Histories

Two case histories will be presented to demonstrate some of the treatment procedures for craniofacial anomalies.

Figure 1 illustrates the before and after changes seen in an eighteen year old high school coed, who underwent craniofacial surgery for correction of

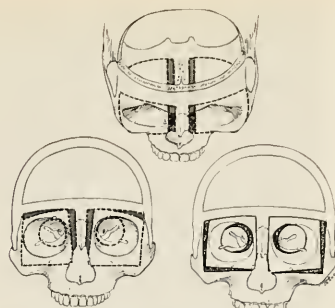
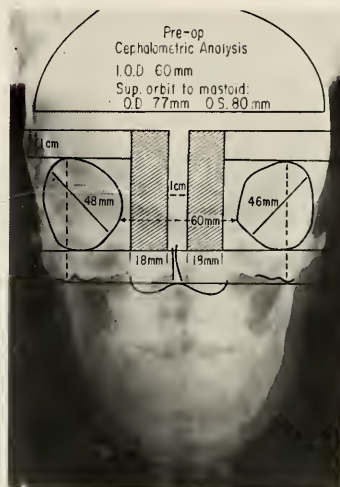


Figure 2. Diagram illustrating paramedian resection of enlarged ethmoid bone (lined areas) and resultant translocation of the orbits with bone grafts from ribs and iliac bone (striped areas)



orbital hypertelorism. Figure 2 illustrates diagrammatically the osteotomy sites which were made through a bicoronal, intracranial approach to achieve the normal interorbital distance in Figure 3.

The second case illustrates a child 6 years of age with Crouzon syndrome (craniofacial dysostosis) (Fig. 4) and the facial configuration before and after surgery. Figure 5 diagrammatically depicts the osteotomies required to move the entire frontal maxillary complex forward 1 centimeter or more. Bone grafts from the ilium and 3 ribs were used in the osteotomy sites (Fig. 6).

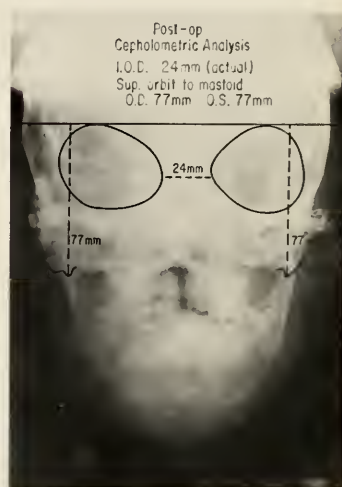


Figure 3. Radiographs illustrating amount of bone resected and resultant normal interorbital distance following surgery



Figure 4-a. Preoperative



Figure 4-b. Postoperative

Figure 4. Child with Crouzon's Syndrome (Craniofacial dysostosis) before and after surgery
a. preoperative
b. postoperative

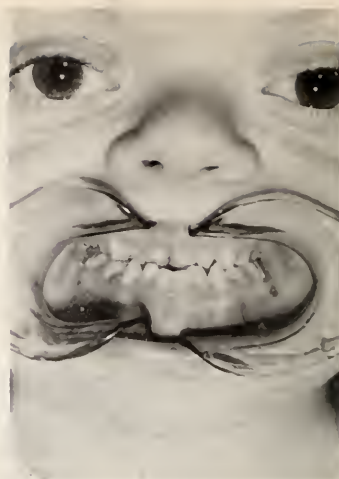


Figure 7. Age 5 years 4 months. Lingual position of the maxilla

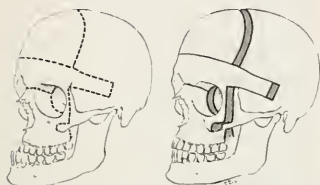


Figure 5. Diagram illustrating osteotomy sites (broken line) used in surgically advancing the face and forehead and bone grafts in place (lined areas)



Figure 8. Intraoral view of splint in place

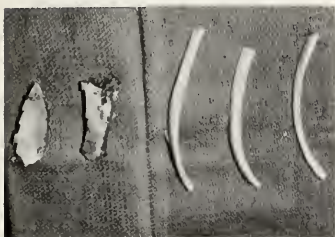


Figure 6. Three ribs and iliac bone removed at the time of surgery which was used to rebuild this child's face

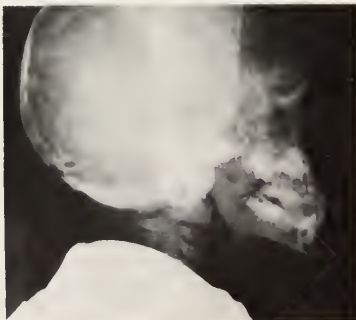


Figure 9a



Figure 9b

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Figure 9c



Figure 9d

Figure 9.

- a. Age 5 years 4 months. Lateral radiograph. Note underdevelopment of the maxilla
- b. Age 6 years 3 months post surgery approximately one year.
- c. Lateral radiograph with splint wired in place
- d. Age 6 years 3 months



Figure 10.

- a. Age 5 years 4 months
 - b. Age 6 years 3 months
- Presurgical and one year surgical AP radiographs. Note improvement of cranium contour and expansion of the maxilla.

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Profile of a Professional

(Continued from page 11)

I married Hilda Davis Feb. 18, 1923 and she died just before our state meeting in May 1972. She was a *dental auxiliary* until one was formed, planning all of the activities for the ladies at state meetings. We have a daughter, Gray, married to Bob Vandervoort, a dentist and he and I have practiced together for many years. I have three grandchildren.

In March, 1975, I married Mrs. Elsie

Butler from Iowa. We live in a condominium at the Lawn & Tennis Club of North Carolina. We enjoy golf, bridge and traveling.

My chief diversion is golf. I am known now as, "Easy Money", to my golfing dentist buddies and I belong to many senior golf groups. I have played in 645 Tin Whistle Tournaments at Pinehurst and in 1940 I was Pinehurst Country Club Champion. One of my prized possessions is a copy of a picture hanging in the Golf Hall of Fame. The foursome is Adlai Stevenson,

Lamont Brown, Voit Gilmore and myself. The picture I value, however, the most is the one of my old dental foursome — Norm Ross, George Kirkland, Dan Carr and myself.

There have been lots of changes in dentistry since 1922. I made my own novocain solution and mixed amalgam in a mortar and pestle. We had one dental assistant or none, no dental hygienists, and no four handed dentistry. Although we had movable operating stools, I never learned to work sitting down. The new techniques, materials and equipment are great, but even now as a patient, I like to spit. I think the greatest thing is the high speed drill.

I think specialists should have a background of general dentistry, either as an associate with an older dentist or as an intern. I believe in keeping up with meetings, post graduate courses or continuing education programs.

I can't understand why any dentist would not immediately get into organized dentistry. As secretary of the N.C. State Dental Society and during World War II in spite of gas rationing I would go to Raleigh and make a pitch to applicants to join the Society.

To younger dentists — be careful of drifting patients; guard your words about another dentist's work; don't sign anything the patient can take to a lawyer that may result in a suit, a black mark on dentistry and the dentist — even though he may be innocent. Dentists should not reconstruct the dental work present in the mouth unless necessary. In some instances, it seems to me that dental fees are getting out of line.

My chief pleasure is enjoying the friends and patients from all walks of life especially, my dentist friends.

Scientific Articles Welcome

The North Carolina Dental Journal welcomes both professional and non-professional articles. Contact the Society's central office for further details.

TWO N.C. DENTISTS INDUCTED AS ICD FELLOWS. Dr. Wayne Mohorn, Greensboro, and Dr. Charles Reap, Chapel Hill, were inducted as Fellows in the International College of Dentists during the annual meeting of the American Dental Association in October, Miami, FL.

North Carolina Dental Hygienists' Association

PRESIDENT'S MESSAGE

In January 1976 the North Carolina Dental Hygienists' Association adopted a revised constitution and bylaws, establishing a House of Delegates as the governing body of the Association. The House is composed of elected delegates from each of fourteen component dental hygiene societies located throughout the state. The first two House of Delegate meetings met in conjunction with annual session. This year we are experimenting by holding a separate meeting April 1-2, 1978 at the Velvet Cloak, Raleigh, N.C. It was felt by separating the business from the annual session, the delegates could more fully take advantage of the scientific session offered.

As annual reports come in, it is evident that NCDHA members are taking *Responsible Action* to achieve the goals set forth for this year, which are increasing membership, better communication among members, and increased participation in continuing education courses.

A very interesting continuing education course was sponsored by NCDHA for dental assistants and hygienists, February 4, 1978 in Winston-Salem on "Transactional Analysis — At Home and At Work" by Donna Woodmansee, psychologist. Many more hours of credited courses will be offered at our 31st annual session, May 13-16, 1978, Mid-Pines Club, Southern Pines, N.C.

At the 1978 annual session, NCDHA will sponsor a joint session for assistants and hygienists on Saturday afternoon with a social and uniform show following a three-hour scientific program on physical fitness. Opening Session begins Sunday with our ADHA District IV Trustee, Sarah Belinky of Atlanta speaking. Sunday afternoon and all day Monday will offer continuing

education courses for C.E.U. credit. A gala dance will highlight our annual meeting on Sunday night, May 14, 1978 at the Country Club of North Carolina. This has been an attractive affair for the past two years and promises to be as delightful this year. All NCDS members, auxiliaries, exhibitors, friends, and guests of annual sessions are invited. Advanced tickets may be purchased at the registration desk at the Mid-Pines Club beginning Saturday, or at the door. The country club security requires identification to enter the grounds, so *wear your official nametag* to insure entry. We look forward to seeing each of you in Pinehurst.

—GAIL H. MCLEAN, R.D.H.
President, NCDHA

**North Carolina Dental
Hygienists' Association
Thirty-First Annual Session
Mid-Pines Club, Southern Pines, N.C.
May 13-16, 1978**

PROGRAM

SATURDAY, MAY 13, 1978

9:00 a.m.-4:00 p.m. — Registration — Lobby
10:00 a.m.-12:00 noon — Executive Board Meeting
2:00 p.m.-5:00 p.m. — Joint Scientific Session: NCDAA-NCDHA — "Physical Fitness" Dr. Dan Shugars and Amy Stambaugh, R.D.H.
5:30 p.m.-7:00 p.m. — Social and Uniform Show — Sponsored by Read's Uniforms for NCDAA and NCDHA members



Gail McLean

SUNDAY, MAY 14, 1978

9:00 a.m.-4:00 p.m. — Registration — Lobby
9:00 a.m.-11:00 a.m. — Opening Session
11:00 a.m.-1:00 p.m. — Leadership Workshop
1:00 p.m.-3:00 p.m. — Lunch on own
3:00 p.m.-6:00 p.m. — Scientific Session: "Health Hazards in Dentistry" Drs. James Crawford, Steve Matteson, Lee Sockwell, and Joyce Jenzano, R.D.H.
9:00 p.m.-1:00 a.m. — NCDHA Dance — Country Club of North Carolina — NCDS Members, Auxiliaries, Exhibitors, Friends, and Guests Invited — *Wear official nametag to insure entry to club grounds*

MONDAY, MAY 15, 1978

9:00 a.m.-2:00 p.m. — Registration — Lobby
9:00 a.m.-12:00 noon — Scientific Session — Round Table Workshops
12:15 p.m.-2:00 p.m. — President's Luncheon
2:00 p.m.-5:00 p.m. — Scientific Session — Round Table Workshops
5:15 p.m.-7:00 p.m. — School Reunions — Each School Responsible for Planning Own Get-Together
9:00 p.m.-1:00 a.m. — NCDAA Dance — National Guard Armory
TUESDAY, MAY 16, 1978
9:00 a.m.-12:00 noon — Executive Board Meeting
12:00 noon — Adjournment

THE DENTIST IS A LADY

JUDY FLYNN

"Since the dental school opened in 1950, 16 women have been graduated. There are now 48 women in the student body."

CHAPEL HILL — The oldest practicing dentist in North Carolina is a woman who works side-by-side with the state's second oldest practicing dentist — her husband.

Dr. Daisy Z. McGuire, 97, and her husband Dr. Wayne P. McGuire, 94, share office space with their two daughters, both of whom are dentists.

Their practice in Sylva is probably one of the few in the state in which patients aren't surprised to find that the lady is the dentist.

Since the days when the barber was the dentist traveling from place to place extracting teeth, dentistry in this country has been almost exclusively a profession for men.

But the face of dentistry is changing.

This year 14 women — the most ever — were admitted as first-year students in the School of Dentistry at the University of North Carolina at Chapel Hill.

The rise of enrollment here — from 1 female student in 1950 to 48 this year — is reflected nationally. Last year the total number of women in dental school more than tripled the number of practicing women dentists in the United States. The most recent American Dental Association statistics show less than 1,700 of the 111,000 dentists in the U.S. are women. Only 20 of these women are in North Carolina.

But with the larger number of women now in dental school these figures will change.

Why the sudden increase of women in dentistry?

One reason women didn't enter the field in the past, says Dr. Beryl Slome, one of three women dentists on the faculty, was the mistaken idea that dentistry takes brute strength.

"They thought you needed to be a man to extract a tooth," she says. "It's more a case of leverage, skill and manipulation. You don't pull a tooth. You elevate it. To remove it generally takes between seven and eight pounds of pressure."

Discrimination also played a part in

keeping women out of dentistry.

"Dentistry was seen as a waste of time and money for a woman," Slome says. "It was felt that women would get married and drop out and all that training would go down the drain."

There has been only minimal discrimination at UNC-CH if that, say women dental students. "Now and then you may feel you have to prove yourself twice," says Cathy Moody, a second-year dental student. "Sometimes you aren't sure that criticism, whether beneficial or not, is the result

of being a woman," she added.

Dr. Ted Roberson, Director of Student Affairs and Admissions, feels there probably was some discrimination in the past, although because so few women applied to dental school it is difficult to measure. But now, he says, women intent on entering dental school here face the same kind of competition as men.

"The standards for admittance are exactly the same," he says. "At no time in the last few years has the admissions committee said, 'Wait a min-



Fourth-year dental student Bettie McKaig checks for cavities.



This second-year dental student is hard at work in a laboratory setting up anterior teeth on a denture mold.

ute. We have too few or too many women.' "

Since the dental school opened in 1950, 16 women have been graduated. Currently there are 48 women in the 320-member student body. Also 3 of the 43 postgraduate students are women.

One reason women are entering dental school is because they feel it is a field that offers them personal alternatives.

"Dentistry seemed right for me if I wanted a family and all the good things that go with that and a health career," says 29-year-old Hazel Brown, a fourth-year dental student from Greenville.

Slome, who has four children and has worked part-time for a number of years, agrees. "I feel very positive about being in the field. I think marriage and bringing up a family are quite compatible with a career in dentistry."

Women also see dentistry as a profession that offers them flexibility both in terms of where they will practice and who will be their patients.

Contrary to expectations women are not choosing to become just pediatric dentists. While some elect to go into private or group practice, others are opting to teach, to work in public health clinics or federally sponsored programs. By not having to invest in expensive dental equipment, they point out, it is easier to move around especially if they are single or have the husband's job market to consider.

Many women enrolled in the dental school here are older than their male counterparts because they have worked a few years before starting graduate school. Nearly 40 percent are married. About 11 percent have children.

Married women dental students say that without the support of their partners dental school would not have been possible. For many it has meant adjustments, understanding, and it hasn't always been easy.

Because dentistry is an extremely demanding profession, both emotionally and physically, the dental school's admissions committee looks for motivation in prospective students.

"It's meaningful to us," Roberson says, "if someone has spent time in a dental office, done something to check out what dentistry is all about."

One of those students who knew what she was getting into is Wake County's Bettie McKaig, a fourth-year dental student and a 1971 graduate of UNC-CH. McKaig, who is 28, worked as a dental hygienist for 18 months before considering dental school.

"I'd like to see school counselors realize that women don't always have to be auxiliaries. To this day I don't know why I got into hygiene. But everyone told me, 'You should be a hygienist.'"

"I've had no surprises," she says, "but other people are surprised to find I'm in dental school."

Because so few women have gone

into dentistry in the past, their numbers are small, their visibility minimal.

First-year dental student Denise Long from Lincolnton has been to parties at which people refuse to believe she's a dental student. "They think I'm kidding, that I must be a dental assistant or hygienist."

Since the first woman received a doctor of dental surgery degree more than a century ago, the percentage of women in dentistry has never been very large or very stable. But the makeup of the dental profession is changing.

Don't be surprised the next time you walk into a dental office to find that the lady is the dentist.

25TH DOC ATTRACTS SOCIETY LEADERS

Nearly 70 North Carolina Dental Society state and district officers, committee chairmen and delegates attended the 25th annual NCDS District Officers Conference, Saturday, Dec. 3, 1977, at the Velvet Cloak Inn, Raleigh.

Following initial reports and a welcome by Dr. R. B. Barden, immediate past president of NCDS and Conference chairman, each group of officers and delegates met separately in round-table discussions of the problems and issues unique to their office. A parliamentary procedure workshop by Dr. Cliff E. Crandell, Chapel Hill, initiated new district officers to the proper workings of local society meetings.

The afternoon working session focused on the issues facing the dental profession in North Carolina, with brief, up-to-the-minute reports on third party dental care by Dr. Walter Linville, illegal dentistry with Dr. J. Harry Spillman, antitrust regulations with Joyce Rodgers and Ray Hornak, the Medicaid program by Dr. Mitchell Wallace and the UNC School of Dentistry with Dean Ray White.

In addition, the moderator of each morning training session reported to the conference group, with recommendations for 1978.

"This has undoubtedly been the best District Officers Conference in my entire tenure with the Dental Society," Dr. Barden said following the day-long session. "The participation and thoughtful examination of the problems and issues facing the Society can only lead to a stronger and better informed organization."



NORTH CAROLINA DENTAL AUXILIARY

Outstanding Artist and Beauty Expert to Talk to Dental Wives

Lib Uzzell Griffin

The portrait of Queen Elizabeth II by Joseph Wallace King of Winston-Salem is the first picture of the Queen painted from sittings to hang anywhere in the United States outside the British Embassy in Washington. The members of the North Carolina Dental Auxiliary will have the unique experience of meeting this exciting artist on Monday night, May 15, at the Pinehurst Hotel.

The talented Mr. King, who often paints under the name "Vinciata" will speak and show beautiful slides of his work. I was lucky enough to see three of his paintings that were in the North Carolina Symphony Art Auction & Exhibit that has been traveling around the state. My first thought was, "How in the world did an old master get in this exhibit?" It was indeed refreshing to see a real artist. One who does not feel compelled to paint something ugly, ridiculous or incomprehensible. The dental wives are in for a treat. Mr. King has exhibited in Paris, Rome, London and New York.

Estee Lauder is a household word for most Dental Auxiliary members. The beauty conscious have certainly heard of this popular line of cosmetics. Tuesday's luncheon, May 16, at the County Club of North Carolina, will give the dental wives a chance to meet and learn from Estee Lauder's right hand, Ida Stewart. She is Vice-President of Estee Lauder and Domestic as well as Assistant to the Chairman of The Board.

Mrs. Stewart, a former South Carolina school teacher, is still teaching. She teaches women who instruct Estee Lauder demonstrators in the art of helping women realize their beauty potential. A graduate of Winthrop College with a B.A. in Art, she later received a Master in Health Education at the University of Maryland. In her

glamorous job at Estee Lauder, Ida Stewart travels all over the world. She will personally demonstrate make-up techniques for the dental wives.

This exciting program was arranged by Helga Howell of Greensboro. She is Vice-President of the Dental Auxiliary. Other Auxiliary officers for 1977-78 are pictured below.



North Carolina Dental Auxiliary officers for 1977-78 are: (seated, l. to r.) Mrs. James Howell, Greensboro, Vice-President; Mrs. N. Watt Cobb, Greensboro, President; Mrs. James A. Privette, Kinston, President-Elect; (standing, l. to r.) Mrs. Morris Griffin, Durham, Corresponding Secretary; Mrs. J. M. Kornegay, Warsaw, Treasurer; Mrs. John Shell, Morganton, Recording Secretary.

DR. ROSS ELECTED PRESIDENT OF N.C. DENTAL FOUNDATION.

Dr. Norman F. Ross, Durham, N.C., was elected president of the Dental Foundation of North Carolina for 1978, at the foundation's annual meeting, Dec. 2, 1977, in Chapel Hill.

Dr. Ross is in the general practice of dentistry and is an Associate Professor at the Duke University Medical Center. A graduate of Duke University, he earned his D.D.S. degree at Temple University, Philadelphia, PA.

Dr. Ross has served as President of the North Carolina Dental Society, the Third District Dental Society and the Durham/Orange County Dental Society and is a Fellow in the International College of Dentists.

Well known in both educational circles as well as in organized dentistry, Dr. Ross has been active in encouraging, organizing and participating in study clubs, continuing education programs and promotion of the Dental Foundation and the School of Dentistry.

Other officers elected at the Dec. 2 meeting included Dr. Kenneth Owens, Charlotte, President-elect; Dr. Walter Linville, Wilson, Vice-president; and Dr. Webb McCracken, Chapel Hill, Secretary-Treasurer. Dr. Baxter B. Sapp, Durham, was appointed to the Executive Committee.

Dr. Parker E. Molian of the University of Florida College of Dentistry provided the scientific session on "Diagnosis and Treatment of Head and Neck Pain Dysfunction."

N.C. SOCIETY OF PREVENTIVE DENTISTRY MEETS.

The N.C. Society of Preventive Dentistry held its annual meeting at the Royal Villa Motel in Greensboro on January 13-14, 1978. Dr. Omer Reed and his staff gave a 1½ day Seminar. There was also a special presentation honoring the past presidents of our state chapter.

Current officers are:

President: John Dunn, Charlotte

Vice President: David Kuhn, Sanford

Secretary: Jim Ray, Winston-Salem

Treasurer: Ken Gibbs, New Bern

Editor: Ron Short, Raleigh



Newly elected officers of the Dental Foundation of North Carolina for 1978 are (l. to r.) Dr. Kenneth Owens, President-elect; Dr. Norman Ross, President; Dr. Walter Linville, Vice President; and Dr. Webb McCracken, Secretary-Treasurer.

NORTH CAROLINA'S EDWARD U. AUSTIN ELECTED TRUSTEE.

The Fifth Trustee District, comprised of the states of Alabama, Georgia, Florida, Mississippi, North Carolina, South Carolina and Virginia, unanimously elected Dr. Edward U. Austin of Charlotte as its Trustee to the American Dental Association for the next three years. The election itself was held in Atlanta September 25, but was reaffirmed in Miami October 12 in order to comply with the *Bylaws* of the District.

Dr. Austin has served the Fifth Trustee District as Secretary-Treasurer, Vice Chairman and Chairman, and has also served for several years as a delegate from North Carolina.

As Trustee, he will have membership on the Board of Trustees of the American Dental Association and will serve on its prestigious Finance Committee. In his new position he will carry a heavy responsibility to represent the viewpoint of his constituents at the national level. We know all his fellow Tarheels wish him well!

JOHN B. SOWTER NAMED TO CHAIR KEY COUNCIL.

Dr. John B. Sowter of Raleigh has been appointed as Chairman of the ADA Council on Dental Laboratory Relations. This Council has become increasingly important in the fight against denturism and Dr. Sowter, a member of the Council for some time, is well grounded and splendidly qualified to head the Council. The name of the Council has been changed to "Council on Prosthetic Services and Dental Laboratory Relations" to indicate the broadened scope of its responsibilities.

In the past several months the fight against denturist legislation in several states has been fought with the help of the ADA through this Council. Their efforts have been most effective, and under Dr. Sowter we can expect even greater success.

Calendar of Events

April 7-9 — NCDS House of Delegates

May 14-17 — NCDS Annual Session, Pinehurst, NC

DENTISTRY

DENTAL SEMINAR DAY ATTRACTS N.C. PROFESSIONALS. More than 400 dentists and dental health professionals from throughout North Carolina attended the 23rd annual Dental Seminar Day, Dec. 2.

Sponsored by the UNC-CH School of Dentistry, the day's events included a scientific program and the Dental Foundation Luncheon.

Dr. Parker E. Mahan of the University of Florida conducted the scientific program, "Diagnosis and Treatment of Head and Neck Pain and Dysfunction." Mahan is professor and chairman of the department of basic dental sciences in the College of Dentistry.

NEWLY ELECTED OFFICERS OF THE ALAMANCE-CASWELL DENTAL SOCIETY FOR 1977-78 ARE:

President: Alexander F. Alexander, D.D.S., Burlington;

Vice-President: Ronald W. Stone, D.D.S., Burlington;

Secretary/Treasurer: Dan H. Barefoot, D.D.S., M.S.D., Burlington; and

Program Chairman: Reid Dusenberry, D.D.S., Burlington.

N.C. REP. STEWART COMMENDS N.C. DENTAL FOUNDATION. Carl J. Stewart, Jr., speaker of the N.C. House of Representatives, said he supports restoration of dental services for adults that were eliminated from the Medicaid program by the 1977 N.C. Legislature.



Carl J. Stewart, Jr., Speaker of the North Carolina House of Representatives, during a luncheon at the 23rd annual Seminar Day, UNC-CH, Dec. 2, 1977.

He addressed the dental needs of North Carolinians during a luncheon at the University of North Carolina at Chapel Hill hosted by the Dental Foundation of North Carolina. The luncheon was part of the annual 23rd Dental Seminar Day sponsored by the UNC-CH School of Dentistry.

Stewart said that preliminary testimony received by the legislature's Medical Cost Containment Commission reveals a number of cases in which poor adults whose teeth had been removed earlier in preparation for dentures have literally been left toothless by the cutoff.

15 STUDENTS IN UNC-CH SCHOOL OF DENTISTRY ELECTED FOR WHO'S WHO. Fifteen students from the School of Dentistry at the University of North Carolina at Chapel Hill will appear in the 1977-78 edition of "Who's Who Among Students in American Universities and Colleges."

The book, published since 1934, lists students from more than 1,000 colleges and universities in America and several foreign nations who have been selected as the country's most outstanding campus leaders.

Students are chosen by campus nominating committees and editors of the annual directory based on their academic achievement, service to the community, leadership in extracurricular activities and future potential.

Students named this year from the UNC-CH School of Dentistry are:

Doctor of Dental Surgery students—Beverly Cozort from Cocoa Beach, Fla.; Gregory Essick, Lexington; Gavin Harrell, Elkin; Harald Heyman, Boone; Judith Jones, Dearborn, Mich.; Burrell Kanoy Jr., Durham; William Kirk, Salisbury; James McLain, Chicago, Ill.; Stephen Stroud, Kinston.

Graduate school students are: Dr. Carol Drinkard, Ann Arbor, Mich.; Dr. David Frost, San Antonio, Tex.

Dental hygiene students—Deborah Dupont, Greensboro; Karen Madden, Burlington; and Valerie Tullai, Chapel Hill.

Dental auxiliary teacher education student—Donna Warren, Maggie Valley.



Dr. Jacob B. Freedland, Charlotte, (l.) receives a Distinguished Service Award from the Dental Foundation of North Carolina "in recognition of significant achievement and meritorious service for dentistry" from Dr. William Current, Immediate Past president of the Foundation. The award was presented during the Foundation luncheon in Chapel Hill.



first district news

William H. Craig, D.D.S., Editor

MEET THE PRESIDENT



Dr. Gene L. Reese

Dr. Gene L. Reese of Boone was recently elected President of the First District Dental Society. Dr. Reese was born on April 20, 1927, in Boone and attended Appalachian State University where he obtained his B.S. degree. He taught math and science in Watauga County High Schools for a period of time and then he served in the U.S. Navy from 1945 to 1946. He graduated from the UNC School of Dentistry in 1954 where he was a member of the Psi Omega Fraternity. Dr. Reese is a past Vice President and President of the Western Piedmont Dental Society and past Vice President of the First District Dental Society. Dr. Reese is presently a member of the Board of New River Public Health and a member of the Tar Heel Dental Study Club. He was the first President of the Boone Jaycees and is the Chairman of the Watauga County Morehead Selection Committee. Dr. Reese is a past member of the Exchange, Lions, Rotary, Optimist Clubs and he is a past chairman of the Watauga National Foundation and the March of Dimes. He is a former member of the Watauga County Board of Commissioners and the New River Board of Mental

Health. He is a member of the local Board of Directors of First Union National Bank. He is a member of Appalachian State University Presidents and Century Clubs and a former member and chairman of the Watauga County Board of Social Services. Dr. Reese is deacon and former chairman of the Finance Committee and a Sunday school teacher at the Boone First Baptist Church. He has served 12 years as a member of the Watauga County High School Advisory Committee and is presently a member of the advisory committee for the Northwest AHEC. He is a member and past co-chairman of the ASV Campus Community Relations Committee. Dr. Reese is a member of the Watauga County Democratic Executive Committee and he is on the Courtesy Staff of the Blowing Rock and Watauga County Hospital. He is a former member of the Boone Zoning Board.

Dr. Reese is married to the former Katherine Farmer of China Grove, N.C. The Reese's have nine children, six boys and three girls and one grandchild. Dr. Gene is associated with his son, Dr. Ron L. Reese in the practice of General Dentistry in Boone.



second district news

James A. Harrell, Jr., Editor

MEET THE NEW PRESIDENT



Dr. Wallace B. Honeycutt

The Second District Dental Society has always been proud of its leadership. Our president for the coming year, Dr. Wallace Honeycutt, Statesville, is another in a long line of distinguished persons to hold this office.

"Wally" has come up through the ranks of the Second District, has served as secretary-treasurer and vice president, as well as a member of many committees. He has served his local society, the Iredell County Dental Society, in many ways and is a past president of that group. Wally is active in dentistry at all levels and is a member of the North Carolina Society of Preventive Dentistry, the Academy of General Dentistry, the American Society of Dentistry for Children and the Yadkin Study Club.

With his versatility setting an example for all of us, Wally blends dentistry with an active family life, civic responsibilities and personal hobbies.

Statesville has benefited from Wally's work as a Kiwanian, of which he is immediate past president, as a Jaycee and from his work in the Cancer Crusade. He was recognized in Who's

Who in the South and Southeast in 1975 for his achievements.

Wally and his wife, the former Pat Greene of Asheville, have four children, Stephany, a sophomore at East Carolina University, Whit, a tenth grader at Statesville High School, and Kristen and Matt, 6th and 4th graders respectively.

Pat, a graduate of UNC-Greensboro, taught school while Wally was in the service, and helped support the family as a hematology medical technologist at North Carolina Memorial Hospital during Wally's dental school days at UNC-Chapel Hill.

In addition to his hobbies, which include hunting, trout fishing, tennis and sports in general, the fall and winter find Wally a frequent visitor to Chapel Hill, "Following the Heels."

We are truly thankful to people like Wally who sacrifice both their time and talents to make the profession better for all of us.

Thank you, Dr. Honeycutt, and good luck in your term as President of the Second District.



third district news

Kenneth R. Diehl, D.M.D., Editor

MEET THE PRESIDENT



Dr. Robert Sugg

The President of the Third District Dental Society for 1977-78 is Dr. Robert Sugg. Bob has practiced general dentistry in Durham since 1955.

During World War II Bob served with the United States Naval Reserve. He then received his undergraduate education at Duke University and his dental training at the University of North Carolina. He was a member of Omicron Kappa Upsilon, Beta Theta Pi, and Psi Omega, the latter of which he was President.

Bob has been active in dentistry for many years, most notably as a member of the North Carolina Board of Dental Examiners for six years. He was President of the Board in 1975. His dental society memberships include the Academy of Operative Dentistry and FICD.

Bob has also found time for involvement outside of dentistry, being active in the Jaycees, Kiwanis Club, and Watts Street Baptist Church. He is married to the former Dorothy Dezern and they have three children.

Meetings Announced

The Mid-year Meeting of the Third District Dental Society will be held March 11, 1978 at the Carolina Inn in Chapel Hill. The meeting will be a one-day affair concerned primarily with issues affecting dentistry and including many of the topics to be discussed at the House of Delegates the following month. We all should be willing to spend one day to keep abreast of the many issues that have an ever increasing effect on our daily practices.

The Annual Third District Meeting will take place on September 29-October 1, 1978. After polling most of the membership at local society meetings, the Executive Committee has decided on the beautiful Sheraton Hotel in Myrtle Beach, South Carolina as the site for this year's meeting. Mark your calendars now since this promises to be an exciting meeting.



fourth district news

Ralph O. Hawkins, Jr., Editor

MEET THE PRESIDENT

A man with interests as diverse as his talents is the only way to describe the new president of the Fourth District Dental Society, Dr. Larry A. Williams.

A graduate of the UNC School of Dentistry in 1966, Dr. Williams began his active professional life even while a student, when he worked in the dental clinics for the N.C. Prison Department between his junior and senior years.

After a brief period in Mecklenburg County after graduation, Dr. Williams went to work as an associate in Greensboro until moving to that city famed for its annual "Mule Days," Benson, in 1967.

Professionally, Dr. Williams has been president and vice president of his local and district societies respectively, served on numerous state and local committees and has represented the state society on the N.C. Rural Health Task Force.

A Fellow of the Academy of General Dentistry, he served as the first president of the NC-AGD from 1971 through 1973 and is currently co-chairman of the Academy's Council on Continuing Education. A member of the American Society of Dentistry for Children, he is a past president of the N.C. Dental Society of Anesthesiology. He is also a member of the Holland Dental Study Club and has served as its chief officer.

Dr. Williams is a past Director of the Benson Chamber of Commerce and past chairman of the Benson Mule Days Judging Committee. In addition to his active role in the Benson Baptist Church, he is past president of the Benson Lions Club and past Master of the Lodge of Ancient Free and Accepted Masons.



Dr. Larry A. Williams, Benson

Married to the former Dorothy Lou Warren, Dr. and Mrs. Williams have two sons, Warren, 10 and eight year old Greg. With hobbies like hunting, fishing, water skiing and sailing, the family spends as much time as possible together at their cottage at White Lake.

With all of his other interests and activities, Dr. Williams still finds time to keep score for the local high school football games and each year presents a trophy to the school's Most Improved Football Player.

The Fourth District Dental Society is proud of the many accomplishments of their new president and is assured of a prosperous future in 1978 in the most capable and experienced hands of Dr. Larry A. Williams.



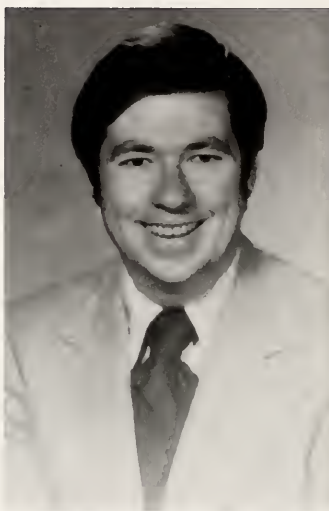
Newly elected president of the Raleigh-Wake Co. Dental Society, Dr. Wayne M. Beavers, Cary (l.) is congratulated by Dr. William R. Spencer, Raleigh, outgoing Society president during the Society's dinner/dance Dec. 2, 1977.

fifth district news



Kenneth W. Gibbs, D.M.D., Editor

FIFTH DISTRICT WINTER SEMINAR



Dr. Joe H. Camp, Charlotte.

The Fifth District Dental Society enjoyed another progressive year under the leadership of past President H. L. Keith. The District is already off to a great start behind President Wayne Anderson. Dr. Keith, Dr. Anderson, and their fellow officers should be commended for their service to the District and to organized dentistry.

The Fifth District held its Annual Winter Seminar Day on Friday, February 10, at the Town and Country Motel in Williamston. The clinician for the one day event was Dr. Joe H. Camp of Charlotte. Dr. Camp is in the private practice of Endodontics, is a graduate of the UNC School of Dentistry and later received his graduate degree in Pedodontics from Indiana University. He received Graduate Education in Endodontics at UNC in 1971-1972. Dr. Camp is a part-time instructor in the Department of Endodontics at the UNC School of Dentistry. Dr. Camp's topic for Seminar Day was "The Management of Traumatic Injuries and Pulpal Therapy for

the Primary and Young Permanent Dentitions."

The meeting again featured an Open Forum Luncheon with three District members fielding questions from attendees. Dr. Bill Hand, ADA delegate; Dr. Ben Baker, President of the North Carolina Board of Dental Examiners; and Dr. Walt Linville, Fifth District Representative to the NCDS Executive Committee and Chairman of the Committee on Dental Care Programs served as the panel for the Open Forum Luncheon.

On January 8, the Fifth District held a New Member Orientation Day at the Washington Country Club in Washington, N.C. New member information included Dental Ethics, Third Party Involvement, and theories regarding the new dentist's practice administration. Dr. Zeno Edwards, Dr. Jim Privette, Dr. Don Bland, and the District Officers served as panel members for the orientation day. Dr. Skeet Hesmer organized this very informative orientation.

NCSDC Holds Fall Meet at Camp Caraway



Newly elected NCSDC officers for 1978 are: (l. to r.) Drs. Ralph Hawkins, Cary, President-elect; Jon W. Couch, Asheboro, President; Jasper L. Lewis, Jr., Greenville, Secretary-Treasurer; and Robert B. Peck, Roanoke Rapids, Vice President.

The North Carolina Society of Dentistry for Children held its annual Fall meeting Nov. 17-19, at Camp Caraway in Asheboro. A continuing education course in clinical pedodontics was presented by two outstanding educators and clinicians, Drs. Paul Starkey and David Avery.

Dr. Starkey, Professor and former Chairman of the Department of Pedodontics at the Indiana University School of Dentistry, lectured on behavior guidance in the dental office and management of deep caries and pulpally involved teeth in children.

Dr. David Avery, Associate Professor and current chairman of the Department of Pedodontics at Indiana, spoke on evaluation and management of traumatic dental injuries.

The lodge-like setting of Camp Caraway was ideal for "getting away," listening and learning. After two and one-half days of relaxed reflection, the meeting adjourned to Durham for the Duke-Carolina football game — a fine ending for a great meeting.

Consumer's Corner

Gathered by Lib Uzzell Griffin

After flashing my North Carolina Press Women's Card, I asked the following people what they thought of dentists and dentistry:

WAITRESS, 18 yrs. old, white, female. "Too expensive! But I guess they have to make a living. Mine does a good job. I like him."

PHARMACIST, 35 yrs. old, white, male. "Wish I were in it. Use them regularly. Good friends of mine. They're super guys. They deserve what they make."

SALESGIRL, 36 yrs. old, white, female. (wearing braces) "I go to the dentist and orthodontist almost all the time. They are nice persons. I am very pleased with both of them. I spend a lot of time in the chair and spend a lot of money. They can work miracles. I had an overbite and spaces. I went with my daughter to the orthodontist. Now we go as a team since he showed me how my problems could be solved, even at my age. This is something we do together."

RETIREE, 69 yrs. old, white, male. "Good dentist but he charges too much. Does good work but when he dulls my tooth it doesn't hurt. But when you pay, it hurts. It's rough. You can get a cheaper dentist but you get what you pay for."

NECROLOGY

Dr. Edwin F. Slott, Burlington, North Carolina
Died October 21, 1976

Graduate of Marquette University Dental School, 1951
Established practice in Graham, North Carolina, Fall, 1951
Moved to Medical Village, Burlington, North Carolina in 1958
Son — Stephen attending UNC School of Dentistry at this time.

Dr. Edward N. Smith, Fayetteville, North Carolina
Died July 22, 1977

Graduate of Atlanta Southern Dental College, 1940
Practice with N.C. State Board of Health prior to establishing private practice in Fayetteville
Member of Cumberland County Board of Health, 16 years, Chairman for seven years.
Cumberland County Health Department building, under construction in Fayetteville to be named in Dr. Smith's honor.

In Memoriam
Paul E. Jones
1890-1977

We regret to inform the membership that Dr. Paul E. Jones of Farmville died December 26, 1977.

Dr. Jones was president of the North Carolina Dental Society in 1930-31. He was a member of the North Carolina State Senate for many years.

He held many positions of leadership and received many honors within and outside the profession of dentistry.

We will miss Paul Jones.

EARMARKED ACCOUNTS

How They Can Solve Your Problems and Help You Accumulate Retirement Dollars

Two doctors had been sharing a very successful practice for several years. They were also enjoying the tax advantages of a retirement plan which permitted them to set aside before-tax dollars each year and allowed the earnings on those contributions to grow tax deferred. But they had never agreed on how their retirement plan funds should be invested. To complicate things further, a young doctor who had recently been added to the practice favored terminating the plan altogether. This, compounded by the stock market slide since the beginning of the year, was bringing the problem to a head.

The senior member of the group was nearing retirement, and he insisted upon investing the funds so the principal would be guaranteed while obtaining the highest possible yield. His long time associate, who was in his mid-forties, maintained that the only way to protect dollars from the effects of inflation is to invest in quality stocks. And the third doctor, with many family expenses and student loans to be repaid, did not like the idea of cash flowing into a retirement plan instead of being available for current needs.

The problem seemed insurmountable until one doctor heard about earmarked accounts. Using this form of segregating retirement contributions, each participant has the freedom to direct his investments as he wishes, without regard for the investment conduct of others in the plan. With earmarked accounts, each doctor would have total control over his own retirement funds.

A conservative investor can purchase government bonds, certificates of deposit, corporate bonds, savings certificates, annuities, mutual funds, and similar "safe" investments. The more aggressive associate can purchase

units of a limited partnership, some types of real estate, or use all his funds to purchase shares of a speculative stock. This freedom is made possible by Section 404(c) of the Employee Retirement Income Security Act of 1974 (ERISA) which eliminates the requirements of the federal "prudent man" rule and diversification within earmarked accounts.

Individuals who need to maximize their current income can also use the flexibility of earmarked accounts to their benefit. They can purchase life insurance on themselves with plan dollars instead of personal dollars. And they can borrow from the vested portion of their trust accounts. Not only is the interest they pay on those loans tax deductible, but it is allowed to accumulate on a tax-deferred basis.

Most retirement plans provide the participant with the opportunity to make voluntary employee contributions of up to 10% of his compensation. If he had not been making such contributions, he may be permitted in succeeding years to make up what would have been permissible in earlier years. Although voluntary contributions are made with after-tax dollars, no taxes are paid on their earnings (including dividends, interest, and capital gains) until they are withdrawn upon retirement.

The tax-favored status of voluntary contributions can be very important to a plan participant. The difference of dollars compounded over several years at, for example, eight percent rather than an after-tax four or five percent is substantial.

Then why do so many individuals invest outside of the protection and tax-favored status of a retirement trust? A major objection to voluntary contributions is the loss of control ex-

perienced by the investor when his dollars join those of the other participants in a pooled account. Earmarked accounts solve that problem, giving the individual maximum flexibility and control over his retirement funds.

Now the three doctors are satisfied. Each can direct his investments to his personal advantage without infringing on the investment freedom of his associates. And with all of the assets covered by the retirement trust, they can expect a much greater return over the years.

Most pension specialists would agree that the way the majority of plans are run doctors are subjecting themselves to "fiduciary liability" under our tough pensions laws. While there are differences of opinion on how likely it is for a suit to occur, the proper use of earmarked accounts can all but eliminate that possibility.

If your retirement plan allows little investment flexibility or if you wish to step away from fiduciary liability, investigate earmarked accounts. Your plan can probably be amended to meet your needs. But don't be misled into believing this will burden you with time-consuming administrative detail and extra accounting work.

If you choose you can engage the services you need. Specialized administration firms are available to take all the work out of your hands. They should be willing to handle plan design and update, plan administration, trusteeship and tax reporting.

Perhaps you, too, can find a better way for accumulating retirement dollars.

DOUGLAS R. DAY
Corporate Consultant
1373 E. Morehead St.
Suite 214
Charlotte, N.C. 28204

Hinman Expands Nation's Prestigious Dental Meeting Convenes in Atlanta in 1978

ATLANTA, Ga. — One of the nation's largest and most prestigious dental conventions, the 66th annual Thomas P. Hinman Dental Meeting, will take place in Atlanta March 18-22.

It is expected to draw some 15,000 dentists, their spouses, dental assistants, hygienists, laboratory technicians, secretaries, receptionists and office managers to the Atlanta Marriott and Atlanta Hilton, which will serve as the convention hotels.

In addition to an expanded dental program, Hinman is creating individualized programs for each member of the dental team resulting in speakers and clinics making up one of the most comprehensive post-graduate dental programs ever offered, according to the general chairman of the meeting, Dr. Ronald E. Goldstein of Atlanta.

A glittering array of lay speakers head the entertainment portion of the meeting, topped by Comedian Bob Hope and including syndicated newspaper columnists Jack Anderson and Ann Landers.

Anderson, the country's top investigative reporter, will deliver the keynote address March 20 and Landers will address a women's luncheon the same day.

Hope will receive the 1978 Hinman Distinguished Service Award, which in the past has gone to South Carolina Gov. James Edwards; former Tennessee Gov. Winfield Dunn and Admiral Thomas Hinman Moorer, former Chairman of the Joint Chiefs of Staff.

The award will be presented to Hope at a banquet March 21. It is given annually to someone who has distinguished himself in dentistry or other fields.

The largest array of technical exhibits (more than 400 in all) for any dental meeting in the South will be set up in conjunction with the five day session.

Dr. Goldstein said the Hinman meeting is greatly expanding its scope in 1978 and will innovate several major things, including an evening of "table clinics," small group teaching sessions

with individual authorities in various fields; an in-depth seminar in office design; health screening examinations; a pre-Hinman course in occlusion and restorative dentistry and a special multi-media presentation on the use of dental photography and audio visuals in communicating with patients and staff.

Featured clinicians number some of the nation's most widely recognized experts and include: Dr. Neil Brahe, on practice management; Dr. Paul Chapnick, on oral surgery; Dr. Herman Corn, on periodontics; Dr. Peter Dawson on occlusion; Morris Feder, CDT, on occlusion and lab techniques; Dr. Harold Gelb, on the TMJ syndrome; Dr. Ronald Jordan, on operative dentistry; Dr. Alex Koper, prosthetics; Dr. Stephen Moss, pedodontics; Dr. Ralph Phillips, dental materials; Dr. Charles Pincus, esthetics; Alice Puzel, practice management; Naomi Rhode, RDH, on communication; Dr. Robert Ricketts, orthodontics; Dr. Herbert Schilder, endodontics; Dr. Philip Williams, full dentures; and Dr. Edwin Zinman, who will preside at a mock court trial on malpractice.

Complete separate programs have been set up for all of the personnel categories in addition to those for the dentists themselves. Dr. Goldstein said, and he said more than a full year of planning has gone into developing this phase of the Hinman meeting.

He said the social calendar and general attendance clinics have also been expanded and there will be seminars for the wives, hobby clinics and fashion shows in addition to historical tours of Atlanta and Roswell.

The meeting is under the sponsorship of the Fifth District Dental Society of Georgia. The society's president is Dr. Harold S. Lanier, Jr., of Atlanta.

The Hinman meeting is named for Dr. Thomas P. Hinman, long time dean of the Atlanta-Southern Dental College, who organized the annual mid-winter meeting in 1911.

Corporate Practice to be Seminar Topic

Corporate practice is proving to be a fine experience for an increasing number of medical and dental practices throughout the United States. If success is to be enjoyed, following tried and proven guidelines is a must! Proper planning and utilization of modern management techniques is essential for orderly growth and peace of mind.

Smoky Mountain Dental Seminars is pleased to present Dr. Robert P. McGraw, a leading authority on Professional Corporations, Practice Management, and Dental Delivery Systems, at a seminar on Saturday, April 29 in Asheville. He is currently in practice as part of an eight man dental group which he co-founded — Independence Dental Center, Inc. in Independence, Missouri. Dr. McGraw was granted the first corporate charter issued to a professional man in Missouri and his group was the first dental professional corporation to be conceded by I.R.S. for tax purposes. He has presented more than 75 seminars throughout the world including every major dental meeting in the United States. His recent publication "Professional Corporations" has received wide acceptance in the professional market.

These topics and many others will be discussed.

—How to obtain maximum benefits from a professional corporation — legally!

—1976 Tax Reform Act and how it affects you.

—Trends concerning Social Security Amendments and its effects on your corporate practice.

—How about trusts to "cut personal taxes"? Educational-Clifford, etc.

—How to prepare for an I.R.S. audit.

—Are board meetings in "exotic" far away places legal?

Registration for the day-long course will begin at 8:00 a.m., Saturday, April 9th in the lobby of the Holiday Inn West, Asheville, N.C.

Registration fees: Professionals — \$85, Spouses — \$30.

For more information and registration forms, contact: Smoky Mountain Dental Seminars, % Darryl D. Nabors DDS, P.O. Box 710, Clyde, N.C. 28721. Phone: 704-627-6460

PROCEEDINGS

Minutes of Executive Committee

WINSTON-SALEM, NORTH CAROLINA

September 9, 1977

The Executive Committee of the North Carolina Dental Society met September 9, 1977, at the Hyatt Hotel, Winston-Salem.

Roll Call. Officers present: Robert B. Litton, President; J. Harry Spillman, President-Elect; Zeno L. Edwards, Vice President; Robert J. Shankle, Secretary-Treasurer; Galen W. Quinn, Editor-Publisher.

Executive Committee members present: D. F. Hord, Chairman; Clarence F. Biddix, Charles A. Reap, Jr., Mitchell W. Wallace and Walter S. Linville, Jr.

Staff present: Joyce B. Rodgers.

Others present: James A. Harrell, Sr., Roy L. Lindahl.

Dr. Hord called the meeting to order at 2:40 p.m. and asked Dr. Reap to give the invocation.

Peer Review Research Project at UNC. Dr. Lindahl was asked to give his presentation on a Peer Review Research Project being conducted at the UNC School of Dentistry under a Kellogg Foundation grant to the American Fund for Dental Health. Dr. Lindahl said the approval of the Dental Society was sought for the project. After discussion Dr. Spillman moved that the project be approved in principle, seconded by Dr. Reap and unanimously approved.

Hospitality Suite at Miami ADA Meeting. Plans were discussed for the North Carolina suite at the Fontainebleau Hotel during the ADA annual session. Dr. Shankle was named by Dr. Litton to be chairman of arrangements. Mrs. Rodgers was instructed to include an item in the *Newsletter* giving hours the suite would be open and inviting all North Carolinians to visit the suite.

Position Paper on Primary Care. A position paper on primary care in county health departments, developed by Dr. Spillman and with Dr. Alex Pearson, was carried over to the next meeting.

Approval of PEP Spokesmen. Mrs. Rodgers referred to a letter from the agency handling placement of spokesmen for dentistry on local radio and TV stations, in which the agency asked that approval be given for these placements. Dr. Spillman moved that Mrs. Rodgers be asked to approve or disapprove, seconded by Dr. Wallace and passed unanimously.

Letter from Dr. Gordon Watson re Anti-Trust. A letter dated August 1 from Dr. Gordon Watson, Executive Director of ADA, was discussed briefly. On motion by Dr. Shankle, severally seconded, the subject was tabled.

Sending Newsletter and Journal to Non-Members. Dr. Quinn had written a letter to the Executive Committee asking that they look into the feasibility of sending the *Newsletter* and the *Journal* to non-members of NCDS. He said he did not feel strongly about it but thought some interest might be created for non-members to join NCDS. On motion by Dr. Litton, seconded by Dr. Biddix, there was a unanimous decision not to send these publications to non-members.

New Insurance Program. Mrs. Rodgers presented a brief resumé of a new full-time accident insurance program offered by the Crumpton Agency and endorsed by the Insurance Committee. On motion by Dr. Shankle, seconded by Dr. Spillman, the program was approved.

Mrs. Rodgers reported that the rate for the Blue Cross group plan will increase 22% effective January 1, 1978.

Commercial Credit Corporation Presentation. Mrs. Rodgers briefly outlined a group loan plan and a vehicle leasing plan offered by Commercial Credit Corporation. Dr. Wallace asked about interest rates, and upon learning they were from 14% to 17%, moved the committee receive the report for information, severally seconded and the committee concurred.

Conference on Continuing Education — Feb. 2-4, 1978. Dr. Spillman moved that the Chairman of the Committee on Continuing Education be asked to go to the Conference on Continuing Education. Dr. Wallace seconded and approval was unanimous. Dr. Wallace said he would talk to Dr. Williams about going.

N.C. Dental Assistants Association Letter. Mrs. Rodgers read a letter from the Secretary of NCDA stating that our complimentary subscription to their *Journal of the ADA* had been cancelled because of shortage of funds. Dr. Wallace moved that we subscribe to the *Journal*, seconded by Dr. Shankle, and passed.

Letter from Kidney Foundation of N.C. Mrs. Rodgers described the contents of a letter from the Kidney Foundation soliciting participation in a dinner to honor Secretary of State Thad Eure. The consensus of the committee was that, while they have great admiration and respect for Mr. Eure, we have no budget to enter into similar projects with other organizations. On motion from Dr. Wallace, the Committee voted to receive the letter for information.

Distribution of the ASAE Evaluation Report. Dr. Shankle distributed copies of the Evaluation Report recently received from the American Society of Association Executives. Dr. Litton moved that the Central Office Committee go over the report in depth and bring recommendations back to the Executive Committee. Dr. Biddix seconded and approval was unanimous.

Report of Central Office Committee. Dr. Shankle, Chairman, reported that the Central Office Committee had interviewed Mr. Ray Hornak and unanimously recommended him to be employed by NCDS. He said the Central Office Committee felt Mr. Hornak should understudy the position of Executive Director and that his responsibilities should be assigned by the Executive Director. After a brief discussion, Dr. Shankle moved that Mr. Ray Hornak be employed effective September 1, 1977, with the interim title of Assistant Executive Director, at an annual starting salary of \$12,500, salary to be reviewed after one year. Dr. Linville seconded and approval was unanimous. Mr. Hornak had been invited to meet with the Committee. At this point he was invited to come in and to remain for the remainder of the meeting.

Dr. Shankle then reviewed the salary of Mrs. Pamela Vevurka, who had joined the staff on a temporary basis but now was replacing Mrs. Jean Pace on a permanent basis. Dr. Shankle moved that Mrs. Vevurka's salary be set at \$9,000 per year. Dr. Spillman seconded and approval was unanimous.

Old Business. The Committee discussed POPP, a publication on Preservation of Private Practice. Dr. Barden had earlier suggested subscribing. Dr. Spillman moved that the subject be carried over again and that members of the Executive Committee be furnished with a copy. Dr. Biddix seconded and the motion carried.

New Business. Dr. Spillman described the situation in Winston-Salem relative to the new HMO dental facility being built by R. J. Reynolds Tobacco Co. He said his District and possibly others were negotiating with the ADA PEP program and the Council on Dental Care Programs to bring a PEP training workshop to the area.

There was discussion about a meeting to be held the following week in Greensboro to discuss the possibility of a HMO there. Dr. Linville moved that Mrs. Rodgers be directed to go, seconded by Dr. Spillman and unanimously approved. (Note: The meeting was attended and members of the Executive Committee were sent copies of a memorandum to the file. JBR)

Next Meeting. Dr. Hord announced that the next meeting of the Committee would probably be in late October or early November.

There being no further announcements, the meeting was adjourned.

ROBERT J. SHANKLE, D.D.S.
Secretary-Treasurer

CENTRAL OFFICE
RALEIGH, NORTH CAROLINA

December 2, 1977

The Executive Committee met at the Central Office on December 2, 1977.

Roll Call. Dr. Robert B. Litton, President; Dr. J. Harry Spillman, President-Elect; Dr. Robert J. Shankle, Secretary-Treasurer; Dr. R. B. Barden, Immediate Past President; Drs. Clarence Biddix, Charles A. Reap, Jr., Mitchell W. Wallace and Walter S. Linville, Jr. Absent were Drs. D. F. Hord, Zeno L. Edwards and Galen W. Quinn.

Others Present: Dr. D. W. Seifert.

Staff Present: Ray Hornak and Joyce Rodgers.

Dr. Spillman called the meeting to order at 8:10 p.m., presiding in the absence of the Chairman, Dr. D. F. Hord, who was hospitalized. Dr. Seifert had explained his reason for coming and had left before the meeting was officially called to order. He asked that consideration be given to sending the Friday Letter to local society presidents and that a subscription to the ADA Leadership Bulletin for them be paid by the State Society. The suggestion was taken under advisement.

Preliminary Report on ASAE Evaluation. Dr. Shankle, as Chairman of the Central Office Committee, gave a brief report on the American Society of Association executives evaluation of our central office operation. He said the Committee will have a second draft ready for distribution to the Executive Committee prior to the January meeting. As one of its immediate recommendations, Dr. Shankle moved that advertising rates for the *Journal* be increased 20%, seconded by Dr. Reap and unanimously approved.

Questionnaire on Illegal Dentistry. Dr. Spillman, Chairman of the Committee on Illegal Dentistry, went over a proposed questionnaire which he and his committee had prepared for circulation to the membership of NCDS in order to gain a consensus of opinion about denturism and how it should be approached. Dr. Shankle moved approval, Dr. Barden seconded for discussion purposes. After further discussion, Dr. Wallace made a substitute motion that the questionnaire be approved, with the addition of three questions suggested by Dr. P. C. Purvis. Dr. Barden seconded and the motion carried unanimously.

Liability Insurance Coverage. Mrs. Rodgers said she had been in touch with Mr. Slade Crumpton, the insurance administrator for several NCDS programs, asking him to check into the Professional Protector Plan coverage now in force for the Society, with the thought that possibly the coverage should be updated or extended. She said there will be a report available for the January meeting of the Executive Committee in Pinehurst.

PEP Seminar. Dr. Spillman outlined the advantages he saw in having a training seminar conducted by ADA under their Public Education Program (PEP), with a sharing of costs which would mean about \$3,500 to \$4,000 as our share. NCDS has a tentative reservation for a seminar, with several dates to choose from. UNC School of Dentistry has offered its facilities, including TV equipment, to help contain costs. After lengthy discussion, Dr. Shankle moved that Mrs. Rodgers contact other states which have recently held these seminars and get their impressions of the worth of the seminar, and that should a decision about a date have to be made soon, it could be done either by mail poll or conference call. Dr. Wallace seconded and approval was unanimous. Mrs. Rodgers was also asked to follow up on the "separate" method of securing materials from the ADA and using previously trained North Carolina dentists to conduct such a seminar.

Sites for AHEC Courses in Radiology for Assistants. Dr. Spillman said the Area Health Education Center in his region is anxious to initiate, and the dentists in the area are anxious to have training in radiology for dental assistants. However, only two sites in the region meet the State Board's criteria as acceptable locations for such a course — Morganton and Salisbury. It was decided to refer this problem to the special committee set up to work with the Board, charging them with trying to secure clearance for several strategic sites throughout the state where continuing education courses in radiology can be taught. Dr. Barden moved that the Executive Committee strongly urge, through the President and the special committee, that the Board of Dental Examiners provide a means of teaching dental auxiliaries expertise in radiology as presently allowed in North Carolina statute 90-47. Dr. Reap seconded and approval was unanimous.

Trip to Washington, D.C. for Congressional Meeting. Ray Hornak reported that the annual trip to Washington to meet with the North Carolina Congressional Delegation had been set for Thursday, February 16. The luncheon meeting is scheduled for Noon to 2:00 p.m. in Room EF-100 of the Capitol. It was agreed that the allowance of \$100 per person be reapportioned for this year and that everyone on the Executive Committee plan to take a morning flight and return in the afternoon. Dr. Wallace moved that the Executive Committee, the Chairman of the Committee on Legislation and Chairmen of other appropriate committees should go, including the Chairman of the North Carolina Delegation to ADA. Dr. Shankle seconded and approval was unanimous. Mrs. Rodgers was instructed to notify the Board of Dental Examiners, the NCDPAC and the Academy of General Dentistry about the date and place of the meeting. Also, we are to invite Mr. Hal Christensen and Mr. Roy Bredder of the ADA Washington Office to meet with us prior to the luncheon and to join us at the luncheon meeting.

Health Manpower Information Service. Dr. Litton reported that the Foundation had voted on December 1 to provide to the Dental School over a two-year period \$27,000 to initiate the Health Manpower Information Service. They will require some support from the North Carolina Dental Society, possibly \$8,000 the first year and \$5,000 the second year. Dr. Spillman suggested that we be in contact with Dr. Gordon DeFries before the January meeting of the Executive Committee, and that he would be able to give us a specific figure. No action was taken to approve or disapprove such support.

Request from Health Services Advisory Committee to Corrections Department. Dr. Zeno Edwards had written a letter to President Litton asking

for a definition of what constitutes adequate dental health care for prisoners, long term and short term. He said that opinions on the committee vary from simple relief of pain for felons to full dental care. The consensus of the Executive Committee was that the Advisory Committee be asked to submit a definition of "adequate dental health care" and ask for the opinion of the Executive Committee.

Statement of Policy Under Medicaid. Dr. Tom Reid, who is a member of an advisory committee on cost containment for the Department of Human Resources, had submitted a policy statement on Medicaid on which he asked clearance by the Executive Committee. The Executive Committee had some question regarding one or two points, and there was discussion on whether to request Dr. Reid to substitute the statement presented by Dr. Litton before the legislative Commission on Medical Cost Containment. Dr. Litton said he would get back to Dr. Reid and discuss the matter further with him.

Policy Statement on Primary Care. The Executive Committee had previously discussed a statement on primary care as provided in county health departments, but had tabled the matter because the final sentence was not included in the draft before them. On motion by Dr. Shankle, seconded by Dr. Barden, the statement was approved. Mrs. Rodgers was directed to send copy of this statement to dental members of county health departments.

Expansion of Dental Care Committee. Dr. Linville, who is chairman of the Dental Care Programs Committee, said his committee needs to be expanded to include some knowledgeable people such as past presidents. When discussion brought out that the entire committee structure will be under study, Dr. Linville said his committee's need could not wait a year or two while the study is completed. The consensus of the group then was to refer his request to the Committee on Constitution and Bylaws for a resolution to be brought to the 1978 House of Delegates.

Dental Insurance Brochure. The Committee received information about the work now being done toward producing a brochure about dental insurance as an information resource for prospective purchasers of group dental insurance. The consensus was that this is a good idea and that the project should proceed.

Dr. Linville also brought the committee up to date on plans to have a prepayment workshop on Saturday, February 18, sponsored by his committee and the ADA Council on Dental Care Programs. On motion by Dr. Linville, seconded by Dr. Wallace, the workshop was approved.

Dental Insurance Manual Rescinded. A general discussion about dental insurance brought the observation by Dr. Reap that he felt the manual developed by his Committee on Group Funded Plans is now outdated and that it should be withdrawn. After further discussion, Dr. Reap moved that the Dental Insurance Manual developed by the Committee on Group Funded Plans be rescinded effective December 2, 1977, and the membership of NCDS be notified of this action. Dr. Shankle seconded and the motion was approved with one abstention — Dr. Barden.

Date of Next Meeting. The next meeting of the Executive Committee was set by Dr. Litton as January 7, 1979, at the Pinehurst Hotel, Pinehurst.

There being no further business, the meeting adjourned at 11:45 p.m.

ROBERT J. SHANKLE, D.D.S.
Secretary-Treasurer

25th ANNUAL DISTRICT OFFICERS CONFERENCE VELVET CLOAK INN

Raleigh, North Carolina
December 3, 1977

Call to Order. The 25th Annual District Officers' Conference was called to order at 8:30 a.m. on Saturday, December 4, 1977, at the Velvet Cloak Inn, Raleigh, North Carolina, by Dr. R. B. Barden, President of the Conference.

Invocation. Dr. Mitchell Wallace, Fourth District representative to the Executive Committee, led in prayer.

Society Report. Dr. Robert Litton, President, gave a report on activities of the Society.

1977 ADA Delegates' Report. Dr. Ralph Colley, North Carolina Delegation Chairman reported on the actions of the 1977 House of Delegates of the American Dental Association.

Report of ADA Fifth Trustee District Trustee. Dr. Edward U. Austin, of Charlotte, newly elected member of the Board of Trustees of the American Dental Association from the Fifth Trustee District, gave a report on activities of the Board since his election, and pledged his best efforts to represent his constituents. He made a strong plea to support the fight against denturism and illegal dentistry in every form, saying this is the greatest threat organized dentistry has ever faced.

Group Discussions. The Conference was then recessed in order that officers could meet in groups with their moderators and discuss their duties and responsibilities as well as to formulate recommendations to the Conference when it reconvened.

Parliamentary Procedure Seminar. Dr. Cliff Crandell, of the UNC School of Dentistry, conducted a discussion of parliamentary procedure which was very well received and provoked a great deal of interest.

Report of Dental Care Committees. Dr. Walter Linville, Chairman, provided a resume of the activities of the Committee on Dental Care Programs. He announced plans for a workshop to be held on February 18, 1978, under the sponsorship of his committee and the corresponding council of the American Dental Association. During his report he mentioned the fact that on the previous evening the Executive Committee had voted to terminate distribution of the *Dental Insurance Manual* which had been developed by the Subcommittee on Group Funded Plans.

Report on Illegal Dentistry. Dr. Harry Spillman reported plans for a survey of the entire NCDS membership to determine opinions and attitudes toward a course of action to combat illegal dentistry. He said he and his committee have been trying to find common denominators from state to state which will provide clues to failures or successes, and also their study has been directed toward finding workable alternatives to denturism and to finding a solution to the problem of providing denture care for all who need it.

Anti-trust and NCDS. Joyce Rodgers and Ray Hornak gave a "newscast" skit which explored the anti-trust laws and their application by both the FTC (Federal Trade Commission) and the Justice Department.

Medicaid Liaison Committee Report. Mr. Mitchell Wallace, Chairman, recounted the work his committee had done in talking with officials in connection with the Medicaid dental program. He said he felt we had made important progress toward having the adult dental Medicaid program restored.

Report from UNC School of Dentistry. Dr. Ray White, Dean, gave a short report on the status of programs at the School of Dentistry.

Following the above-mentioned reports, the floor was opened for questions directed to any member of the panel. Among the questions were several about the insurance manual. Answers brought out these points: (1) There is no change in philosophy regarding the doctor-patient relationship. The contract is still between the doctor and the patient; (2) The Executive Committee, in discussion preceding the motion to withdraw the manual, realized it would be impossible to revise the manual without going into it carefully, and couldn't ask the Committee on Group Funded Plans to do this within a short period. The Executive Committee considered it their duty, when the House of Delegates was not in session, to take the action to withdraw the manual as policy of the NCDS. There was no discussion about the possibility of another effort to revise the manual later.

REPORTS OF DISCUSSION GROUPS

Presidents. Dr. Litton reported that his group had discussed district meetings and communication between local and district societies and the NCDS. He said it had been brought out that information about election of officers, committee appointments, etc., is frequently not made available to the Central Office. He said he had also requested that district presidents make the NCDS president aware of scheduling of functions where he is expected to attend, as well as ladies' functions the wives of NCDS officers are invited to attend.

Vice Presidents. Dr. Edwards said in his group, whose principal responsibility is that of membership — one big bottleneck had been discussed. He asked that all Vice Presidents help the Central Office and the State Vice President by sending in names and membership applications as early as possible so that they can be processed in an orderly manner as they come in.

Dr. Edwards said he would like to suggest that the District Vice Presidents be given 25 New Member Packets so that the new members may have the information immediately.

Presidents-Elect. Dr. Spillman said his group had discussed two principal points: (1) The importance of really laboring over committee appointments; and (2) Improving communications from the top to bottom and back up.

Secretary-Treasurer. Dr. Shankle reported for this group and enumerated several points which they considered important: (1) The importance of the previous Secretary-Treasurer passing on information to the new Secretary-Treasurer; (2) the value of using the DOC Manual as a guide; (3) keeping current by reading the *Friday Letter and Newsletter*; (4) possibility of levying registration fee at NCDS and district meetings — some districts already do this; (5) possible dues increase (around \$20) in 1979 for NCDS members; (6) plans to design a membership certificate to present to new members when inducted, to make available to other members at cost; (7) plans for publication of membership roster in June, with a supplementary section to be published after district officers are elected in the fall, and hopefully to include office phone numbers and home phone numbers . . . need cooperation on this; (8) a PEP training program to be conducted for representatives from each district, equipping them to "preach the gospel" of dentistry; (9) using the district representatives on the Executive Committee to visit local society meetings to bring them up to date on what is going on at the state and national levels; (10) follow the lead of one district which had a "professional enthusiasm committee" to develop interest and attendance at district meetings.

Committee Chairmen. Dr. Wallace reported that this group had discussed communications and how to improve them. The chairman felt that the committees, properly operating, can become one of the best ways to disseminate information back to the grass roots level. It was suggested that all committees meet in the Central Office when possible, with a staff member present to have input into the meeting and to take minutes. It was also suggested that minutes of the Executive Committee be sent to all committee chairmen, and that there be an exchange of minutes between various committees when the subjects they are considering are related. Minutes and other records should be passed on from one chairman to the next.

Editors. Dr. Quinn reported that there had been three district editors present in his group. He asked for feedback regarding the *Journal* and solicited scientific articles.

Delegates to ADA and NCDS. Dr. Coffey said it had been suggested in his group that a committee be asked to study the feasibility of designating ADA delegates by slots or seat numbers. Since the Constitution and Bylaws provides the President shall automatically be a delegate, it was suggested that one delegate be elected from each district and one at-large to serve along with the President each year. The question had been posed: If this individual represents a district, is he a district delegate to the ADA or a state delegate? Also, discussion brought up the question of legality of voting for a delegate from another district if you are unable to hold that office. Dr. Barden said this subject would go as a request from the DOC for a study.

Dates for 1979 District Meetings

First District	September 21, 22, 23
Second District	Unconfirmed
Third District	September 28, 29, 30
Fourth District	September 6, 7, 8
Fifth District	September 13, 14, 15

Election of Officers. Dr. Robert Litton was elected President of the 1978 District Officers' Conference and Dr. Robert J. Shankle was named as Vice President, both by acclamation.

Date of next DOC. On motion by Dr. Spillman, unanimously approved, December 2, 1978 was chosen as the date for the next District Officers' Conference.

Continuing Education Program. Dr. Hand outlined a plan for voluntary continuing education programs to be controlled at the district level, all continuing education efforts to be planned a year in advance, eliminating conflicts and duplication. He said if North Carolina had a system of statewide sponsored programs, it could avoid pressures from the Federal Government and national health agencies to make continuing education mandatory. He suggested a \$24-per-year assessment for twenty-five one-day programs, or five in each district. Members from one district could attend other district programs without charge. Dr. Litton moved that this suggestion be referred to the Continuing Education Committee for report to the House of Delegates. The motion was severally seconded and approved.

It was generally agreed that this had been one of the best attended and most enthusiastically received District Officers' Conference in some years, and Dr. Barden was congratulated upon a job well done.

The conference was adjourned at 4:30 p.m.

VELVET CLOAK INN RALEIGH, NORTH CAROLINA

December 3, 1977

The Executive Committee of the North Carolina Dental Society met following the conclusion of the District Officers' Conference at the Velvet Cloak Inn, 4:30 p.m., December 3, 1977.

Roll Call. Dr. Robert B. Litton, President; Dr. J. Harry Spillman, President-Elect; Dr. Robert J. Shankle, Secretary-Treasurer; Dr. R. B. Barden, Immediate Past President; Dr. Mitchell Wallace.

Staff Present: Joyce Rodgers.

Dr. Litton said he had called this meeting in order to give the committee an opportunity to rescind its action of the night before regarding the dental insurance manual if it so desired. Dr. Litton asked whether, as was asked in the District Officers' Conference, anyone felt there was an emergency. It was pointed out that the Justice Department has already requested and received certain documents from NCDS, among them a copy of this manual. After further discussion Dr. Barden said, since he had abstained from voting previously he would make a motion that the Executive Committee rescind its action of December 2 until such time as legal counsel's opinion could be secured. Dr. Litton seconded. On voting the motion lost and the action of the Executive Committee on December 2, 1977 stands.

ROBERT J. SHANKLE
Secretary-Treasurer

The Executive Committee of the North Carolina Dental Society met January 7, 1978, at the Pinehurst Hotel, Pinehurst, North Carolina.

Roll Call. Officers present: Robert B. Litton, President; J. Harry Spillman, President-Elect; Zeno L. Edwards, Vice President; Robert J. Shankle, Secretary-Treasurer; Galen W. Quinn, Editor-Publisher.

Executive Committee members present: D. F. Hord, Chairman; Clarence F. Biddix, Charles A. Reap, Jr., Mitchell W. Wallace and Walter S. Linville, Jr.

Staff present: Joyce B. Rodgers and Ray Hornak.

Others present: Harold E. Maxwell, Roy L. Lindahl, Guy R. Willis, Charles L. Milone, James C. Eagle, Jr., Robert W. Wilson and J. A. S. Reynolds.

Dr. Hord called the meeting to order at 2:15 p.m. and gave the invocation.

Annual Sessions Committee Report. Dr. Eagle, General Chairman, gave the Executive Committee a report on the budget and program plans for the Annual Session. A budget of \$18,590 was approved on motion by Dr. Barden, seconded by Dr. Spillman. Dr. Eagle explained that the House of Delegates budget, which had formerly been included in the Annual Sessions budget, had been deleted, since it is no longer held in conjunction with the Annual Session. After agreeing that an electric pointer should be purchased by the North Carolina Dental Society, the Executive Committee unanimously approved Dr. Spillman's motion to leave details of the program and other functions to the Annual Sessions Committee.

Quality Assurance Project. Dr. Roy Lindahl, of the UNC School of Dentistry, had previously sought and was given the support of the Executive Committee to pursue a project aimed at developing criteria for evaluating quality of dental care. At this time he asked for assistance in locating ten private general practitioners who would be willing to participate in the project. He said the offices selected should be within reasonable travel time of Chapel Hill. The project will run two years and is funded through the American Fund for Dental Health, with money from the Kellogg Foundation. Officers selected will receive a nominal monthly stipend to pay for paperwork by staff. Dentists will receive no monetary benefit, but will be supplied with helpful analytical data about their practices should they wish to have it.

Dr. Spillman moved that the Executive Committee of the North Carolina Dental Society approve this study and recommend to NCDS members that they consider being a part of it. Dr. Shankle seconded and the motion was passed with one "no" vote and one abstention.

Update on Mobile Units. Dr. Linville asked Dr. Lindahl to give an update on the project the Dental School had undertaken to evaluate dental care in the mobile dental units supplied by the Reynolds Foundation. Dr. Lindahl did so, saying that without his notes at hand he was able to give only an outline description of the services and personnel involved in these units. *Health Professions Information Service.* Dr. Charles Milone, of the UNC School of Dentistry, said he, Dr. Gordon DeFries, and Ms. Jane Stein had just returned from the University of Minnesota, where they had observed their system for providing a service to health professionals who want to locate or relocate. The system also assists communities needing professionals. Dr. Milone said conversion of the Minnesota plan for use in North Carolina will be somewhat more expensive than anticipated—costing about \$2,000. After further discussion, Dr. Wallace moved that the budget item of \$8,000 be carried over until the NCDS budget came up for discussion. Dr. Spillman seconded and the motion passed. (Later, during the budget discussion, Dr. Linville moved that the appropriation of \$8,000 be approved for the Health Professions Information Service, seconded by Dr. Wallace and the motion was passed unanimously. Dr. Maxwell expressed his concern that, inasmuch as this program is to be used by practicing dentists as well as graduating students, the computer terminal be housed in the Central Office. Dr. Milone said there might not be a suitable terminal used in the program, but that he would like to have an advisory committee from NCDS to oversee the program. Dr. Willis said that, while Phase I of the program is very important, the most important part will be Phase II, which will not start immediately. This will include community profiles and will be instrumental in placing dental manpower where it is needed.)

ASAE Report. The report of the Central Office Committee, based on the report of the American Society of Association Executives (ASAE), was discussed in detail. Several deletions were authorized. An amended report will be submitted by the Executive Committee to the House of Delegates and will be printed in the *Journal*. Included in the report are the following recommendations, which were moved by Dr. Shankle, seconded by Dr. Linville, and approved unanimously.

Recommendation 1. A registration fee to be charged at the Annual Session. The fees for members would be \$15; for non-members, \$25; for auxiliaries \$5; exhibitors and clinicians free. This to be effective with the 1978 meeting.

Recommendation 2. Alternate sites be tested every other year for the annual session in order to obtain more exhibit space, and to determine whether less expensive sites would encourage younger members to attend annual sessions.

Recommendation 3. Dues of NCDS members be increased \$20, effective in 1980.

These recommendations, if approved by the House of Delegates, would be implemented sequentially, in order of their listing.

Public Relations Memorandum and Budget. Dr. Shankle reported that the Central Office Committee had reviewed a memorandum prepared by Ray Hornak covering a proposed internal and external PR program. The princi-

pal provisions which were approved on motion by Dr. Shankle, seconded by Dr. Biddix, are:

Recommendation 1. NCDS provide its own "PEP" training program, using ADA materials and those members already trained in national workshops, organization and implementation to be done by Ray Hornak and Joyce Rodgers. Cost—Approximately \$900. This would save about \$2,500.

Recommendation 2. On advice of the Central Office Committee and the ASAE report, create a general-purpose pamphlet explaining the aims and purpose of NCDS. Cost—Approximately \$2,000.

Recommendation 3. Periodic news releases to be written by NCDS staff, plus features based on *Journal* articles as feasible.

Recommendation 4. Purchase a good camera. Cost—Approximately \$750 (including accessories, film and processing costs for the year.)

Recommendation 5. Purchase a cassette recorder-player. Approximate cost—\$100.

Recommendation 6. Develop an NCDS symbol, or "logo." Work to be started soon on developing possibly two or three alternatives to be submitted to proper committees for consideration.

Recommendation 7. Title of the Assistant Executive Director be changed by adding, "Director of Public Relations."

The meeting recessed for dinner and reconvened at 7:45 p.m.

NCDS Journal Plans and Budget. Dr. Shankle presented the report of the Central Office Committee, which had acted as the budget committee in preparation for this meeting. He said they had discussed the *Journal*—both its cost and publication schedule—and had come up with the recommendation that it be published two times a year on a trial basis, effective with the upcoming issue, and at the same time the *Newsletter* be expanded and published more frequently. After discussion, Dr. Shankle moved that we go to two expanded issues of the *Journal* per year, and that this be done on a trial basis of one year to see what type of budgetary improvements we have, effective immediately. Dr. Wallace seconded and the motion passed by a vote of six to three.

Representatives to Medicaid Conference. On motion by Dr. Wallace, seconded by Dr. Shankle, it was decided that Dr. Tom Reid be asked to represent NCDS at a Medicaid Conference to be held at ADA headquarters in Chicago, April 11-12, 1978.

Suit in Federal Court re Medicaid. Dr. Litton referred to a letter and copy of a brief he had received on a suit filed by a dentist and a physician against the Secretary of the Department of Human Resources and his chief assistant. The letter asked for support from the North Carolina Dental Society. Dr. Litton said that in conversation with Dr. Morrow recently, he had received the strong impression that the adult dental program will be restored in the next fiscal year by the Legislature. Dr. Shankle moved that the letter and brief be accepted for information purposes only. Dr. Wallace seconded and the motion passed unanimously.

Including Award on NCDS Agenda. Dr. Litton referred to a letter from a member asking for permission to confer an award on a member of an Academy at the Tuesday evening banquet. Because of the precedent-setting nature of this request, Dr. Linville moved that we provide room on the printed program for functions of various allied groups, but that time on the banquet agenda could not be extended to all groups, therefore to none. Dr. Biddix seconded and the motion was carried unanimously.

Dental Care in Prisons. Dr. Edwards said he is in the process of surveying some dentists who have expressed interest in dental care in the prisons to gather information for a report to the State Department of Corrections or the level and quality of dental care that should be provided to prison inmates. He is interested in hearing from anyone who has something to contribute to his survey.

Update on Liability Insurance for NCDS. Mrs. Rodgers reported that she had received from the Crumpton Agency and from Poe & Associates letters of reassurance about the coverage afforded by the policy carried on the Society, its officers, employees, committees and districts.

Representative to President-Elect Conference. On motion by Dr. Wallace, seconded, it was decided that Dr. Spillman should attend the conference for Presidents-Elect at the ADA Headquarters February 9-10, 1978.

Parliamentarian at House of Delegates/Pinehurst. Because of budgetary considerations, it was decided by consensus that we hold the upcoming sessions of the General Assembly without the presence of our General Counsel, as has been the tradition. It was also decided that the Speaker of the House should be asked to contact Dr. C. E. Crandall and ask him to provide parliamentary guidance at the House of Delegates. Dr. Litton said he would call Mr. Robert Howison and discuss this decision with him.

Amicus Visitation with Congressmen from N.C. Dr. Hord asked Mr. Hornak whether all arrangements have been made for the Washington trip February 23 to meet with the North Carolina Congressional Delegation. Mr. Hornak said Dr. Tom Reid plans to go on the night of February 22 and will have a studio room suit for our caucus to meet prior to the luncheon meeting. Mr. Hal Christensen or his representative from the ADA Washington Office will meet with our group prior to the meeting and will also attend the luncheon. Members of the Executive Committee, the Chairman of the ADA Delegation, the Chairman of the Committee on Legislation and the Chairman of NCD-PAC plan to attend. The Board of Dental Examiners has been notified of the meeting and have been invited to send a representative. Those who attend as representatives of NCDS will receive a stipend of \$100 toward their expenses.

Dental Care Workshop February 18. Dr. Walter Linville, Chairman of the Committee on Dental Care Programs, announced that the workshop planned for February 18 will be held at the Sheraton-Crabtree Hotel, Raleigh, on February 18, 1978. The agenda will be geared to a group of 35 maximum, so

attendance will be by invitation. The entire Executive Committee is invited, and other NCDS members who are interested may monitor the meeting. There will be a working luncheon. Three representatives from the American Dental Association will conduct the workshop.

No Smoking Rule Passed. Dr. Reap moved that no smoking be permitted at official business functions of the North Carolina Dental Society. Dr. Shankle seconded and the motion passed by a vote of four to three.

Communication from Staff Member. Dr. Shankle read a note from Faye Marley, thanking the Central Office Committee and the Executive Committee for the gift for her son at Christmas and also for the check she received for Christmas.

Journal Editor Statement. Dr. Quinn made the following statement and asked that it be quoted verbatim:

"Statement read at the N.C. Executive Committee meeting January 7, 1978, Pinchurst, N.C.

"First of all does the Executive Committee wish to set a deadline for the next Journal.

"Although I am a non-voting member of the Executive Committee I would like to express my opinion about some actions, especially two, taken by the Executive Committee today.

1. It is difficult for me to understand how the Committee can endorse a research project for the entire Society without any form of protocol in writing before you or by having made a previous thorough study. Certainly, however, you have obligated the entire Society with little or no study.

2. Since I am personally involved in the second decision I am not convinced that a thorough study was made of the purpose of reducing the number of Journals to be published yearly.

"I am extremely embarrassed about the fact that I was not consulted about the Journal budget or its future course. In fact, at the moment, I don't feel as though I am recognized as the Editor.

"Had I known information concerning cost of publication revenue policies, or possibilities, and editorial policies would be discussed, I certainly would have prepared the necessary documents prior to the meeting.

"As for publication dates, I have found nothing in writing to set any publication date except that there has been by tradition four Journals by seasons and the *Constitution and Bylaws* specifically requires at least two. Whether or not — the decision was not necessarily based on facts and figures. It therefore seems to me that there is another underlying factor.

"If you are disturbed by the manner in which I have performed or the quality of the Journal I would appreciate hearing from you at this time."

Adjournment. There being no further business, the meeting was adjourned at 10:30 p.m.

ROBERT J. SHANKLE, D.D.S.
Secretary-Treasurer

At a duly convened meeting on January 7, 1978, the Executive Committee of the North Carolina Dental Society approved the budget for fiscal year 1978, copy of which is attached and made a part of these minutes.

ROBERT J. SHANKLE, D.D.S.
Secretary-Treasurer

BUDGET NORTH CAROLINA DENTAL SOCIETY 1978

Approved by the Executive Committee January 7, 1978

		Budgeted Income		
Income				
State Dues		\$125,000.00	Subscriptions	850.00
Annual Session		21,170.00	Miscellaneous	1,500.00
Publications				96,793.00
Journal	\$7,000.00		<i>Annual Session</i>	18,590.00
Directory	80.00	7,080.00	<i>House of Delegates</i>	1,350.00
			<i>Publications</i>	
Interest		6,400.00	Journal	16,000.00
Expense Reimbursement		3,010.00	Newsletter	3,500.00
I.C. System		9,000.00	Directory	1,600.00
Miscellaneous		2,000.00		21,100.00
			<i>Committees & Conferences</i>	
		\$173,660.00	Dental Health	100.00
			Peer Review	400.00
			Dental Care	1,200.00
			Executive Committee	100.00
			DOC	500.00
			Public Relations	3,750.00
			Legislative Committee	400.00
			Miscellaneous	200.00
				6,650.00
			<i>Reimbursement of Officers & Delegates</i>	
			Conferences	\$ 4,100.00
			Delegates	16,800.00
			Headquarters Suite	2,500.00
			President	750.00
				24,150.00
			<i>Miscellaneous</i>	
			Contributions	1,300.00
			Peer Review Insurance	497.00
			Memberships	800.00
			N.C. Health Manpower	8,000.00
			Miscellaneous	2,000.00
				12,597.00
			TOTAL	\$181,230.00
Expenses		Budgeted Expenses		
<i>Central Office</i>				
Salaries & Taxes-Permanent	\$58,430.00			
Salaries & Taxes-Temporary	300.00			
Rent	9,028.00			
Supplies	3,100.00			
Office Machine Maintenance	1,100.00			
Telephone	5,000.00			
Postage	2,300.00			
Travel-Executive Director	3,500.00			
Insurance-Hazard	335.00			
City & County Taxes	250.00			
Newsclipping Service	300.00			
Employee Insurance	3,000.00			
Accounting Fees	1,000.00			
Legal Counsel	2,000.00			
Addressing Service	2,300.00			
Capital Fund	1,000.00			
Petty Cash	100.00			
Retirement	1,400.00			

Committee Reports

LONG RANGE PLANNING COMMITTEE

The Long Range Planning Committee met on December 3, 1977, in Raleigh, North Carolina. Present were Drs. James A. Harrell, Sr., Chairman; D. W. Seifert and Dwight Hord. Submitted herewith is the Committee's report for consideration by the House of Delegates.

- (1) It has been suggested in the ASAE Evaluation Report that an ad hoc committee should be appointed to study the committee structure of the North Carolina Dental Society in order to conform more closely to the ADA's council structure.

This committee should deal with all aspects of redesigning committee structures as to name, purpose, and function.

Therefore the Long Range Planning Committee recommends the following resolution:

- 1C. *Resolved*, that an ad hoc committee be appointed to study the committee structure of the North Carolina Dental Society in order to conform more closely to the ADA council structure.
- (2) The Long Range Planning Committee studied this committee also in order to make it more active. To make sure all segments of the membership in the state are represented we feel that it should be changed. It should be a "blue ribbon" committee with the most interested and recognized members appointed to it.

This committee should be charged with the responsibility of setting immediate priorities, recommending ways to fund and implement those proposed programs it ranks high, and projecting the needs and concerns of the profession and the Society in the future. The committee should engage in serious research and study of the present environment in which the profession operates so that it can accurately anticipate coming events. In this way, the Society will be able to act, rather than react, when its members' interests are at stake.

Therefore, we submit the following resolution:

- 2C. *Resolved*, that the Long Range Planning Committee be composed of the five (5) immediate past presidents of the districts and the two (2) immediate past presidents of the North Carolina Dental Society with the senior immediate past president of the Society as chairman, effective with the year beginning May, 1978.
- (3) In order to have better communications among the membership, the House of Delegates, and the organization; more reasonable accommodations for the members and more adequate space for the exhibitors; and in order to have a combination meeting of the House of Delegates and the Annual Session, be it therefore,

3C. *Resolved*, that a new site be proposed for the Annual Session.

4C. *Resolved*, that the House of Delegates meetings be scheduled as a part of the Annual Sessions agendas of the North Carolina Dental Society, effective with the 1980 session, if a new site is approved for annual sessions.

Respectfully submitted,

D. W. SEIFERT, JR.
DWIGHT B. HORD
C. W. POINDEXTER
DARDEN J. EURE, JR.
JAMES A. HARRELL, SR., Chairman

RESOLUTIONS

Resolutions 1C, 2C, 3C, and 4C are presented for consideration.

PUBLIC RELATIONS COMMITTEE

Due to a restructuring of the North Carolina Dental Society's committees and the employment of a staff professional to act as liaison and state coordinator for the Society's public relations programs, the Public Relations Committee did not meet officially in 1977-78.

Mr. Raymond J. Hornak was employed by the Society as Assistant Executive Director/Director of Public Relations as of September 1, 1977. To effectively utilize Mr. Hornak in his capacity as Director of Public Relations and with the approval of the Executive Committee, the Public Relations Committee has planned the following projects for 1978:

1. A more active role for the Public Relations Committee, to provide creative thinking for a more visible society and professional image, to act as liaison with district leadership, and to provide staff guidance and support;
2. Provide a PEP Seminar utilizing already trained volunteers in North Carolina and coordination from the Central Office staff;
3. Production of an informational brochure on the North Carolina Dental Society;
4. Expanded efforts to provide a continuing source of up-to-date news and features to North Carolina media;
5. Purchase of certain necessary equipment for an expanded public relations program.

Recommendations for the Public Relations Committee include a closer working relationship with the Society's Executive Committee and other committee chairmen, a more active role for Public Relations Committee members, particularly on the local level, and an internal, continuing education program for Committee members, who act as district liaisons, reporters and district Journal Editors.

The Public Relations Committee plans to be a source of information, guidance and assistance to every member of the North Carolina Dental Society.

Respectfully Submitted,

R. B. BARDEN
KENNETH R. DIEHL
KENNETH W. GIBBS
JAMES A. HARRELL, JR.
RALPH O. HAWKINS
ROBERT B. LITTON
JAMES B. MACOMSON
MITCHELL W. WALLACE, Chairman

REMINDER: All committee reports and Resolutions to be included in the House of Delegates "Blue Book" are due immediately.

Noninvasive, Infrared Monitoring

(Continued from page 27)

a 6.6-nm wide band. This compares with the intensity of sunlight of approximately 300 μW in a 6.6-nm band in the same region, or more than 10 mW cm^{-2} in the entire near IR window, and the 500 mW cm^{-2} level now allowed by national laser safety standards. Our studies are aimed at application of this technique to the monitoring of adequacy of intracellular oxygenation in clinical ischemia and hypoxemia.

The observation of a highly reduced steady state of the CuH atom of cytochrome a₃ is in disagreement with the highly oxidized state of the heme-a₃ iron of this enzyme in isolated mitochondria in vitro (12). High reduction levels of the cytochromes, including cytochrome a₃, have, however, been observed in a number of intact tissues (13), including the heart (14) and the normally perfused, exposed cerebral cortex (6, 9, 15). From the above data it appears that in vivo a partial block between CuH and oxygen exists and accounts for the high reduction levels, which are lost during the preparation of mitochondria for experimentation in vitro.

FRANS F. JÖBSSIS

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16. I thank J. H. Keizer, R. F. Overaker, M. M. Graffon, B. J. Comfort, J. A. Cannon, and A. Scagnelli for assistance in various aspects of the work; Drs. J. M. Colacino, F. G. Hempel, J. C. LaManna, L. J. Mandel, M. Rosenthal, H. A. Saltzman, T. R. Snow, and A. L. Sylvia for advice, support, and criticism; and Dr. B. Chance for supplying various unpublished data and for helpful discussions. Partially supported by NIH grants 1R01 HL 17391, NS 06233, and NS 13319.

4 May 1977; revised 24 August 1977

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The Effect of Duration and Technique of Toothbrushing

(Continued from page 33)

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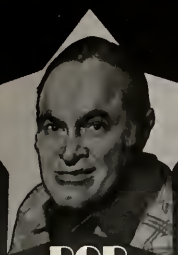
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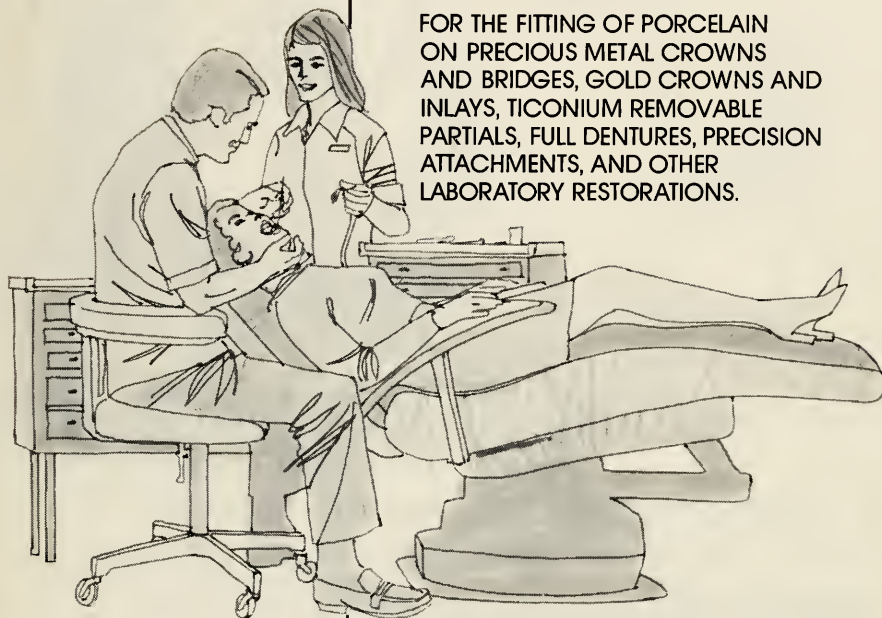
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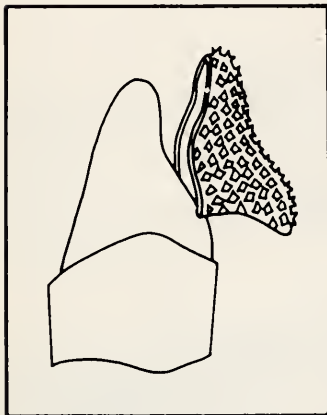
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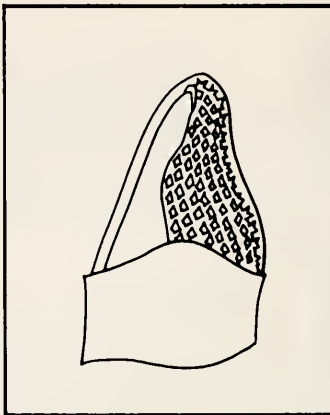
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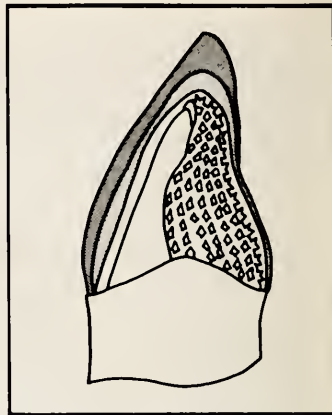
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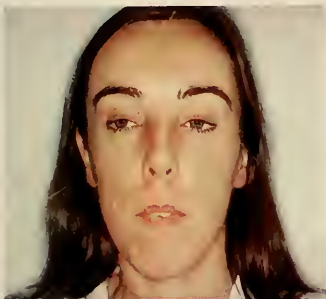
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"I understand that this information will be presented in a suitable manner and used for the further education of dental professionals to alert them to problems like mine. I am pleased that I can be of some help—and hope that it reaches a lot of people." R.R.

See DEFORMITY OF THE FACE, JAWS
AND DENTITION

North Carolina DENTAL JOURNAL

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EDITORIAL

Are Dentofacial Deformities a Preventable Disease?

The breathing process influences many parts of the body including the face, jaws and dentition, and the process does not "belong" to any one branch of medical science — it belongs to the *individual*. Medical science has assumed the responsibility of caring for the individual as a "whole," however the care has been divided into parts or specialties who must respect each other's knowledge and assure the individual that he will remain a "whole" and not "a-part."

The *dentist* as well as the *family physician* or *pediatrician*, physician associate, nurse practitioner or whatever is a *primary care* person. He is *primarily responsible* for the growth and development of the face and jaws and care of the teeth. He is *morally* obligated to request assistance from his surgical as well as medical colleagues to help him in any manner possible to insure the best possible care for the *patient*.

To relate the nose to the teeth and supporting structures is difficult if one has not learned about the soft tissues of the oral cavity, how the teeth and jaws should be properly related, conducted longitudinal growth studies, studied the works of others or does not subscribe to the fact that soft tissues influence the direction of growth and determines the configuration of hard tissues.

It is also hard to relate breathing as a cause of malocclusion or deformities of the face, jaws and dentition which the dental profession is trained to prevent and correct. The ability to breathe through the nose properly provides a proper muscular balance and a healthy development of the face, jaws and dentition.

The balance between the tongue, lips and cheeks determines the shape of the alveolar process, the shape of the dental arches, size and shape of the palate, and influences the size and shape of the maxilla and nasal cavities.

A healthy functioning individual should be able to breathe through *both* nasal cavities *without* resistance. If difficulty in breathing is experienced from either cavity in an upright position, then certainly, detrimental mouth breathing will occur while the subject is in a prone (or sleeping) position.

Breathing in a prone position becomes difficult because of an increase in the size of tissues in the head, including the nasal structures. The elevated fluid and blood pressure causes the increase in size and is due to gravity.

The test for the cause of mouthbreathing or the ability to breathe through the *nose properly* should be done with the patient in an upright position, the lips closed lightly and each nasal cavity closed alternately to determine whether the airway interference is a nasal obstruction or a nasopharyngeal obstruction.

Under no circumstances should vasoconstrictors be introduced to the nasal structures prior to testing for breathing capabilities. Inability to breathe through the nose, *not habit*, causes mouthbreathing. Mouthbreathing creates an imbalance of the tongue, lips, cheeks and facial muscles and consequently *causes* malocclusions, and improper relationship of the jaws or deformities.

Improper nasal breathing or airway interference is caused by an obstruction in the nasopharyngeal area or in the nasal complex.

At present there are essentially three schools of thought relative to the treatment of airway interference:

1. Save all parts at all costs and disregard developing deformities or related problems unless life is endangered.



GALEN W. QUINN, D.D.S., M.S.

2. Remove offending structures, only, if they are diseased (pathology by infection-pus).

3. Evaluate the individual as a *whole*. If deformities or other health problems are developing or have developed, determine the cause, prevent or eliminate the cause and then treat the existing problem as early as possible with the least traumatic experience. Surgery to the nasal structures or lymphoid tissues is much less traumatic than surgery to the jaws, temporomandibular joints or teeth.

4. I know of no school of thought that recommends routine removal of all lymphoid tissues or routine operations on the nasal structures and I also hesitate to condemn the 1920's for "wholesale" removal of tonsils and adenoids until some valid proof is offered that removal of nasopharyngeal lymphoid tissues is detrimental to health.

There is an ongoing controversy among physicians, surgeons, dentists and the patient or parent about the immunological value of the nasopharyngeal, lymphoid tissues (tonsil and adenoid) and whether or not removal of the tissues will create more or fewer health problems, shorten or lengthen lives. (To the best of my knowledge, there have been no valid long term studies published.)

There is also a controversy in regard to the surgical relief of nasal obstruction at an early age to establish proper breathing capabilities. Obstructions usually involve hypertrophied turbinates, deformed septums, polyps or cysts. "Early age" is defined as a time when the results of airway interference causes a deformity that can be recognized or is creating abnormal growth patterns.

It has been a disappointment to blame all breathing obstruction on the lymphoid tissues. Many times in the past patients have been referred for removal of an airway obstruction and the adenoids and tonsils or both have been removed only to find that the individual could still not *breathe properly* through the nose.

Some surgeons feel that early surgical reduction of turbinates and septal surgery will interfere with the growth and development of the nose and maxilla.

Deformities should not be experienced *if* the proper surgi-

cal procedures are followed since no growth sites are involved. *On the contrary*, if proper airway is established during the growth period, a deformity will be prevented and a healthy growth pattern will be encouraged.

Through exchange of knowledge, mutual trust, confidence and understanding, surgeons have recognized the problem and have operated on the septum and turbinates at an early age. Only positive results in growth and development have been observed.

There are pediatricians who will not refer a patient and surgeons who will not remove enlarged (*pathologic*) lymphoid tissue or correct aberrant structures of the nose that are causing airway interference to assist in orthodontic corrections of the teeth, for the treatment of TMJ problems, or to arrest the recession of gingival or alveolar bone.

Something is wrong with the education and knowledge for that individual or else jealousy or prejudice exists in thinking. The same pediatrician will not refer and the surgeon will only operate if pathology by disease *infection* is present.

Pathology manifests itself as a disease not only by an infectious process but by *size, shape, or position* of parts of the anatomy. Disease is described in Webster's dictionary as: 1. Trouble. 2. A condition of the living animal or plant body or one of its parts that impairs the performance of a vital function. 3. A harmful development.

There certainly appears to be a lack of evidence that timely and judicious removal of aberrant structures which cause deformities and problems of other parts is detrimental to the body as a *whole*.

In view of the lack of detrimental evidence it is difficult to rationalize maintaining or sustaining aberrant tissues that cause multiple episodes of earaches, multiple myringotomies, a constant history of stuffiness, runny nose or postnasal drip, frequent visits to the physician, long term use of antibiotics, improper eating and sleeping habits, speech problems, increased incidence of tooth "decay," malocclusions of teeth and other deformities of the face, jaws and dentition that may require more serious surgery to establish or maintain proper function in later life.

Antibiotics are employed to reduce or control infections that cause interference in breathing and since no one is quite sure about the future effects of prolonged use of antibiotics on the grown or the growing body, especially, one might ask "which course is more beneficial to the body, minor surgery or prolonged medication plus surgery?"

It is known that some antibiotics at certain ages certainly have a deleterious effect on the teeth.

Two questions could be asked about the deformities of the face jaws and dentition caused by airway interference.

1. *Why do we wait for the deformity to occur?* One answer could be that the primary care persons or those who see and guide the child first are *not adequately trained* in this particular area. Unfortunately, the second answer could be that the teeth have not been placed in the *highest esteem category* as are other parts of the body by the general population as well as some of the other medical sciences.

2. *How long can the aberrant tissues or conditions remain without causing "irreversible" damage to other parts of the body?* Once hard tissues are laid down their configuration can only be changed by surgery. One needs only to recall the results of poliomyelitis on the young and the answer to the question would be that causes of deforming conditions should be treated as *soon as they occur*.

There are too many treated, documented "irreversible" cases in our longitudinal studies which have required surgical-orthodontic, or prolonged orthodontic treatment to correct deformities of the face, jaws, and dentition, to deny that these problems are not caused by the *inability to breathe properly* through the nose.

Similar documented records demonstrate how preventive or early, proper and judicious removal of airway interference structures will not only allow proper growth and development of the face, jaws and dentition, but will also provide a healthier and happier life for the individual.

To be conservative is commendable, but *conservatism* may result in *radicalism* in the nature of disabilities, deformities and unnecessary dissection.

Having had many major and minor surgical experiences, including a "too late tonsillectomy," I do not subscribe that all tonsils and adenoids be removed or that all noses be operated upon without careful and knowledgeable evaluation of the problems that are being created. I believe in conservation of God given parts, but not to the extent that it will *endanger life* or make life *unnecessarily difficult*.

Yes, I believe that many dental facial deformities are preventable.

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(Continued on page 57)

PRESIDENT'S REPORT



J. Harry Spillman, D.D.S.

We normally think of mid-summer as a time for vacation and a slow down in the activities of our Society. This has not been true, however, this summer. The able members of our Central Office staff, together with committee chairmen and officers of our Society, have been very active.

The members of the Medicaid Liaison Committee under the able leadership of Mitchell Wallace and working with Joyce Rodgers and other members of the Central Office have been especially busy. They have met many times with people from the Department of Human Resources and the State Legislature to help them reinstate adult dentistry in our Medicaid program in a way that is cost effective and free of abuse. At the same time, they have attempted to make the program as free of cumbersome red tape as possible for the participating dentists.

I am particularly pleased with the energetic way that so many of the chairmen and members of some of our major committees have responded this early in the year.

Walt Linville and members of his Dental Care Programs Committee have met and made plans for an indepth meeting to more fully acquaint the committee members with their duties, particularly in the area of peer review. They have already begun work in accepting cases for peer review and I believe this to be the major area in which we need to strengthen our efforts.

Jerry Clark and Don Cheek, co-chairmen of the PEP and Oral Health Care Forum Committee, are in the process of planning with Joyce Rodgers' and Ray Hornak's help, a PEP Seminar to be held in November at the Dental School. You will hear more about this as plans develop.

Ken Owen and his committee are in the process of streamlining our state committee structure and those of you who in the past have been involved with our committees realize that this is a much needed action. Ken and his committee will try to avoid duplication and clearly spell out committee responsibilities by patterning our committee structure after the council structure of the ADA.

The Long Range Planning Committee has been restructured and under the chairmanship of Jim Harrell, has already met and made plans for this committee to assume its great responsibility for mapping our future goals.

The Travel and Educational Advancement Committee has met and made plans for an even more efficient program.

I could go on but you get the idea of why I am so excited over the promise for this to be a year of great accomplishments for our Society.

I would be remiss if I did not again take note of the great honor brought to our State Society by the election of one of our members, Ed Austin, last fall to be Trustee of our Fifth District.

Also, I just returned from the National meeting of the Academy of General Dentistry in Atlanta where another member of our State Society, Jim Harrell and his wife, Isabel, were honored for the great job they did as general chairman of the meeting. In addition one of our Winston-Salem dentists, Fred Smith, was honored for having the best table clinic among the dozen from all over the country.

Our problems are many and they won't be resolved this year nor the next, but if we personally strive to stay informed and if all facets of our profession work in a united way, I believe we can minimize the effect outside forces will have on us. Your Executive Committee and Officers will do their very best to work with the auxiliary, the dental school, the Board of Dental Examiners and all other interested groups to find the best solution to our problems. In the final analysis, the delivery of the finest dental care to the largest number of people at the fairest cost is the goal of everyone concerned.

I look forward to seeing many of you at the District Meetings this Fall and again. I would like to express my appreciation to you all for your confidence in allowing me to serve as your President.

J. HARRY SPILLMAN, D.D.S.

International College
of Dentists
Student Award Recipient

“... no matter how great or small.”

Dr. Diefes is the recipient of the 1978 International College of Dentists Award “for the student who has shown the greatest degree of professional growth and development during his years as a student of dentistry.” This editorial is from selected remarks to the International College of Dentists at their annual luncheon May 15, 1978, during the 122nd Annual Session of the North Carolina Dental Society, Pinehurst, N.C.

by
Dr. Darryl J. Diefes

In my last two years of dental school, I pledged myself to deepening my commitment to the profession and to my patients, realizing that the time had come to put away those interests and attitudes which were impeding my professional development.

Making that decision was a big step for me as a student, yet I expect many of you who are practicing dentists face that decision frequently. I am sure that I too will have to deal again and again with the matter of personal commitment and attitude.

Even though many of my attitudes have changed in the last few years, some of my ideals and objectives in dentistry have remained constant. My interest in dentistry stemmed originally from a desire to work with my hands and to use whatever talents God had given me for the benefit of the people around me. These two interests have persisted through dental school. I am convinced that helping people is a most worthy goal, and as a dentist I will have a golden opportunity to do that with my life. But helping people through dental school involves several factors which I must always be aware of.

First, a dental practitioner is seldom praised for even his best efforts in treating his patients. His dedication to his patients frequently receives little overt recognition or gratitude. Although lack of appreciation is not always the case, in my mind it is to some extent a fact of life for the dentist. Many elements contribute to this situation — a high level of fear and a general lack of understanding on the part of the patients being two of the most obvious. Dentists must certainly do their best to limit the effects of these components in their patients, but they will very often be faced with that fact of life of unpraised effort.

Whenever I have found myself frustrated in this situation in the past, I have tried to separate my motivation from the patient's response. It is always nice to be reinforced by a patient's appreciation, but I did not enter dentistry seeking praise. My motivation lies not in external sources, but it has to come from inside myself — from an inner knowledge that what I am doing is helping my patients, regardless of whether or not they display appreciation. The sustaining drive for my practice has to come from my faith in that while I am serving my fellow man, I am also serving my God.

The book of Ephesians in the New Testament says to work, “as the servants of Christ, doing the will of God from the heart; with good will render service as to the Lord, and not to men, knowing that whatever good thing each one does, the same will he receive back from the Lord.”

It is in this perspective that I find my encouragement, and it has proved sufficient for me.

A commitment to help people begins with a commitment to care for them not just as patients, but also as friends, whether they are adults or children, well educated or uneducated. We are told so often about the importance of a relationship of low fear, high trust between the patient and dentist. But trust is not something that an individual can oblige others to give him merely as he sees fit. Rather, it is earned through consistently displaying sound judgment, indubitable integrity, and above all, sincere personal concern, not for one's own gain, but for the benefit of others. As a dentist, I can help people only if I have some degree of their trust and cooperation, and that will occur when they begin to sense that I am concerned for their welfare both as dental patients and as people. My choice of a rural area as a location for my practice was closely bound to this desire to help people — especially people who have not had dental care readily available.

As for my concrete objectives for my practice, I first want it to be preventive oriented. I hope to stress prevention with my child patients, because children can benefit the most from preventive dentistry, and to me, they are the people who are most receptive to this approach. In addition to teaching preventive dentistry in my office, I hope to be able to set up preventive workshops in the public school system, since this appears to be the most effective method of reaching those children who aren't being seen by a dentist.

I am personally committed to exerting an influence on the future generation of adults — an influence which will lead to an appreciation of good dental health and dental care. This will simplify my job, and they can reap the benefits of maintaining a dentition which looks good and functions well.

I am looking forward to beginning this next phase of my life, and I view it as a period of continued growth and learning. I believe the practice of dentistry can be almost anything a person tries to make of it, from a dreaded daily routine — to a satisfying, fulfilling art. One thing is certain, though — the practice of dentistry is no more than what we make of it!

I hope to use my practice to fulfill those desires which led me to enter the profession, and to provide a needed service to the community in which I live.

I don't expect to drastically change the lives of the people around me, but I feel that I must make my contribution to the community, no matter what shape or form it eventually takes, no matter how great or small.

PROFILE OF A PROFESSIONAL

By Lib Uzzell Griffin

Ralph D. Coffey, D.D.S., Morganton, N.C.

In looking back over a long and useful career in dentistry, Ralph Coffey has just cause to be proud, to be content. Leaning back in a comfortable chair in his study, surrounded by his antiques, his citations and awards, his favorite things, quiet confidence flows. Here is a man who knows where he has been, where he is now and where he is going.

"I have been speaker (of the House of Delegates, North Carolina Dental Society) ever since we've had one. I have organized every business meeting and appointed committees. Of the 25 to 30 men appointed by me to do the business, I can truthfully say, I have never had anyone refuse to serve. I have only been challenged and lost once. Then by only two votes."

"I have seen my job as a glorified peacemaker. I have tried, through the years, to pour oil on the waters. My first involvement in the NCDS on a state level was Secretary-Treasurer. That was the last Secretary & Treasurer office. Then they hired an executive secretary and set up a central office in Raleigh. To show you how times have changed, the income of the Society was around \$12,000. Now it's approximately \$173,000. That was '54.'"

Dr. Coffey, as secretary of the Advisory Committee to select a dean for the new School of Dentistry at Chapel Hill, when it was founded, recalled, "Chancellor House wanted the school to be second to none. We interviewed top flight men. In fact, every man became a dean later on somewhere. I am very proud of the dental school."

Ralph served as Director, The Dental Foundation of North Carolina, Inc. from 1955 to 1974. During that time, he served as vice-president, 1962-63 and as president, 1963-65. He delivered an address to the Eleventh Honors Convocation at the School of Dentistry of North Carolina in June of 1964.

After serving as Secretary-Treasurer of NCDS, 1954-56, Dr. Coffey moved on up to President Elect in 1956 and President in 1957. He was

Alternate Delegate to American Dental Association from 1956-57. He has served as Delegate from 1962 to date.

"I remember one year, when I was a delegate, we couldn't seem to get any recognition. We quickly did something to remedy that situation. So we organized the Fifth Trustees District Organization. We meet before the national meeting to be sure we get the support of other states. They know we're around now. One thing I've seen in my lifetime is to see us have a trustee, Ed Austin, of Charlotte. That makes me very proud of our Society."

Ralph served as Vice-Chairman of the Fifth District in 1963-64. He was Secretary and Vice-Chairman of North Carolina's Delegates to the ADA in 1963. He was Chairman of the North Carolina Delegation to the American Dental Association, 1964-65 and 1970-71 to date.

As a member of the Council of Insurance, ADA, 1966-1969, he was Chairman from 1969, 1970 to 1971. In 1972 he was made a Consultant and has been serving on that important committee every since.

"I am proud to say we have malpractice insurance for every man in dentistry now. They said it couldn't be done! I told them 'where I come from, We shall Overcome!' " By chance, a company in the Mid Western States canceled everybody. 3,000 canceled at one time. We found a company in Florida, wrote a contract with Equitable, established the Keogh Plan. It's another benefit of organized dentistry. We asked Ray West Insurance Co. out of Winnipeg, Canada to set up a plan for dental students. You could get \$24,000 for \$25. Had an open enrollment for those under 40 years of age. Now you can get up to \$250,000 under 50."

Ralph looked toward his living room as he recalled, "We met with Senator Ervin (Sam). The Social Security for dentists idea was born right in that room after World War II."

As Dr. Coffey handed me his long list of professional, civic and church

involvements, he talked about the future of dentistry.

"I am afraid the golden years are over. Think how many times we've had to raise dues. Consider increasing government interference. We are having to spend more time lobbying. There's more litigation. So we don't know what the future holds. It's a shame we have to spend all our time with Medicaid. I worry about Health Maintenance Organizations going up all over the state. This third party thing is just a headache."

"I would say to young dentists coming along, get into things. Get into organized dentistry. Look on it as a profession, not a job. What you don't know about should be referred. Set your priorities. Your patients, your family and your community."

"I know you can make things happen. Get involved. Not only in your profession but be politically active. Get into all the civic affairs and religious activities in your town. Your words and actions will have a tremendous influence. A good friend of mine from Texas, way back in 1926, made me aware of this. Your words and actions do have a tremendous influence."

Cyrus, the Great, founder of the Persian Empire (d. 529 B.C.) said,

"You cannot be buried in obscurity: you are exposed upon a grand theater to the view of the world. If your actions are upright and benevolent, be assured they will augment your power and happiness."

Certainly Ralph Coffey's kindness, gentlemanly ways, words and actions have had a great influence for good in the North Carolina Dental Society.

He practices what he preaches, "Think people first, yourself second."

"Probably next year will be my last as speaker. I have enough pride to get out before I'm put out. I desire to leave on my own."

Ralph Coffey might leave this office but not our thoughts and gratitude. We are proud for him and with him. A true professional.

NEW KID ON THE BLOCK

By Joyce B. Rodgers
Executive Director
North Carolina Dental Society

Move over, Jimmy and Joe and Ham and Jody! There's a new kid on the block and he's ready to take on all comers for the title of King of the Hill. He's smart and alert, muscular but quick on his feet, and he plays to win. His family has fifty members, some bigger and stronger than others, but all support him in his quest for the title of King of the Hill. They support him because he's their ticket to survival. Most Americans would support him if they knew what he has been up to, because his story sounds good. He's in the mainstream of America just like baseball, hot dogs, apple pie and Chevrolets — not to mention motherhood. *But* in our book he has quit preaching and gone to meddling! He has decided to write a "suggested" dental practice act and circulate it to the fifty governors and state legislators.

This new kid is the Council of State Governments which isn't really a new organization at all but is becoming a power to be reckoned with on the national scene. The Council of State Government is the "association" of the state governments and serves a very good purpose as a resource organization. Its research facilities and model legislation have been considered by some to be valuable to state legislatures for years.

For some reason the Council on State Government decided to do an in-depth study on the profession of dentistry. The Council apparently does not plan to do studies on other health professions — just on dentistry, though several other professions and trades may be slated for similar scrutiny.

The study consists of background papers on seven areas: Denturism, Organization and Function of State Boards of Dentistry, Dental Education, Licensing and Regulation, Continuing Competence, Manpower Utilization, and Dental Care Delivery Systems.

The Council received a grant from the Kellogg Foundation to finance this study. A National Task Force on State Dental Policies, organized to supervise the project, is composed of state elected and appointed officials, including two or three dentists. The only name published in connection with the Task Force was that of its chairman, Lt. Governor Zell Miller of Georgia. The North Carolina Dental Society requested and received a copy of background papers on all seven studies and distributed them to members of the Executive Committee and to District Presidents with a request for opinions. The North Carolina Dental

Society had been invited to make comments on the first six studies by May 1, 1978 and on the seventh study by June 1, 1978. A composite statement was made about the first six and a separate commentary about the seventh paper, *Dental Care Delivery Systems* was submitted. Space will not permit reproduction of the entire communication concerning these papers, but a thumbnail sketch of the stance of the Council on State Government on a few subjects and the reply of the North Carolina Dental Society is submitted:

LICENSURE AND REGULATION:

CSG: When issues to be decided are public policy issues, the public has a growing fear of the regulated doing the regulating. Therefore, public members on boards of dentistry would help allay this fear.

NCDS: To understand dentistry's motivation in supporting supposedly "restrictive" dental practice acts, one must look back to the early days when dentistry was not the art and science it now is. A hundred years ago there was virtually no regulation of dentistry and the public demanded something be done. Through the leadership of organized dental societies, legislation was passed in the states creating regulatory agencies which are now state boards of dentistry. The *profession* of dentistry came into being *after it regulated itself* and set its own standards for licensure. To suggest that a board of dentistry is too biased to act in the public interest unless it has lay people as members is to imply the dental profession lacks integrity. The statement is made in one paper (*Organization and Function of State Dental Boards*, page 11) that "if the ultimate purpose of a state board is to protect the public, then diversity of membership rather than uniformity would seem essential." This statement is particularly repugnant. . . . These problems cannot be solved by tearing down the institutions that have been so painstakingly built. . . . Regardless of how idealistic it may seem to have laymen on licensing boards, admissions committees, accreditation committees, etc., it is not practical or feasible to place that responsibility in the hands of people who don't have an understanding of the specifics involved. . . .

COST OF DENTAL CARE:

CSG: The cost of health care will continue to rise in direct proportion to the number of health providers because each professional in the health

field establishes a "target income" and proceeds to charge his patients accordingly. Therefore, the more physicians and dentists, the higher the cost of health care.

NCDS: The books containing these theories are based on medical care costs, not dental care. What is true for medicine is not necessarily true for dentistry. Dentists have demonstrated more restraint than any other health care providers in escalating fees. Practically the same percentage of disposable personal income is being spent on dental care now as was spent in 1955; 0.6% compared to 0.5% in 1955. Therefore, if income of dentists is increasing it is because of their increased productivity and the fact that a slightly higher percentage of the population is seeking dental care. During the past ten years, according to the Consumer Price Index, dental fees have risen 72.2%; physicians' fees 88.5% and the cost of a semi-private hospital room has risen 168% (Note: Latest CPI figures show an even greater disparity in favor of dentistry.)

MANPOWER UTILIZATION:

CSG: "Even if expanded auxiliary practice proves to be more expensive and less efficient, state government has no interest in restricting such practices, as long as patient safety considerations are satisfied."

NCDS: This statement is irresponsible, in that it encourages modes of practice which could result in significantly higher costs to the taxpayer for publicly funded programs. If new modes of practice are proven feasible and efficient through research, practice acts can be amended to include them. . . .

DENTAL HEALTH CARE:

This topic was the subject of the seventh and last study in the series. The paper contained glowing recommendations on group practice as opposed to the "cottage industry" solo practice — reciprocity is the only way to go — the New Zealand dental therapist concept is the way of the future — HMOs will bring down costs — dentistry began practicing preventive dentistry only when it became financially rewarding — practice acts are too restrictive to allow progress, etc., etc., etc.

In the opinion of the observer, the last paper was based on such poor research and contained so many errors that at the end of the North Carolina Dental Society's three page commentary the following statement was

made: "Because of the number of gross errors in this study, the conclusions are questionable. We believe the paper should be rewritten after additional research, based on fact rather than assumption."

* * *

Only the tip of the iceberg has been shown and the uneasiness about the potential dangers of the study was confirmed at the annual Management Conference at the American Dental Association headquarters in June, 1978. A representative of the Council of State Governments was on the program. It had been hoped that there would be stiff questioning from the floor and that ADA staff members on the panel would ask "buzzer" questions which would open up discussion. Disappointment followed when only one member of the panel asked questions. Questions from the floor were mostly inquiries for information. There was either lack of awareness concerning the existence of the Council of State Governments and its goals or there was reluctance to pin down responsibility on what the North Carolina State Dental Society considers to be a serious threat to private practice. The young man from the Council on State Governments was able to shrug

off questions with a half-jest! Since the North Carolina Dental Society was on record in writing, no fight was carried out in that forum, but perhaps it should have been.

The North Carolina Dental Society is on the mailing list to receive any rewritten drafts that may come out. The author has been assured by telephone that a great many controversial statements were made in order to bring out all sides of questions for the Task Force to consider before making its recommendations. It was pointed out by the North Carolina Dental Society that there is a problem accepting draft and background material taken as gospel by laymen who may be unable to make a judgment as to its true role in the big picture.

To save the best until last, the project of Council on State Governments has made one contribution which is significant and hopefully will not be buried alive in the rewriting of the papers. The study on Manpower states in so many words that there is a surplus of dental manpower in this country. It is a well-thought-out dissertation on how we got to where we are and why. But the ADA Bureau of Statistics and Economic Research was not consulted on the Manpower subject, so there is a question of validity of the report.

It is the hope of the Dental profession that the legislators will not be quick to accept any "suggested" Dental Practice Act from the new kid on the block.

122nd Annual Session A Success Despite Unpredictable Weather

Although the weather in the sandhills of southeast North Carolina wasn't the most cooperative, more than 700 dentists got "Back to Basics" at the 122nd Annual Session of the North Carolina Dental Society, May 14-17, 1978, at the Pinehurst Hotel and Country Club, Pinehurst, N.C.

But, thanks to Dr. James C. Eagle, Jr., Chairman, and the other members of the Annual Sessions Committee, Pinehurst and surrounding area was as cordial and as hospitable as ever before.

Final attendance for the four day program of business, education and entertainment approached 2,300, including 706 dentists, 346 Auxiliary members, 175 exhibitors, 147 special guests, 199 hygienists, 531 assistants, 97 students and 36 laboratory technicians.



President of the North Carolina Dental Society for 1978-79, Dr. J. Harry Spillman, Winston-Salem, and his wife, Nancy.

Because of the threat of late afternoon showers, Sunday evening's social honoring the dental Auxiliary was moved indoors. After dinner, Sunday's First General Session officially kicked off this year's meeting, and included words of welcome from Mrs. Carolyn Cobb, President of the North Carolina Dental Auxiliary, Mrs. Gail McLean, President of the North Carolina Dental Hygienists Association, Ms. Carolyn Wood, President of the North Carolina Dental Assistants Association and Mr. Victor Euliss, President of the North Carolina Dental Laboratory Association.

"Today, more than ever before, we must take the 'long look'", said North



Outgoing President, Dr. Robert B. Litton, Shelby (left) receives his "Past President's Plaque" from immediate past president, Dr. R. B. Barden, Wilmington.

Carolina Dental Society President, Dr. Robert B. Litton, during his address as outgoing Society leader. "Our actions, both individual and collective, in our offices and in our meetings, can drastically affect the future of dentistry," he commented, urging responsible involvement from the membership.

Monday again ushered in bad weather as an uninvited guest and kept at least one invited guest from arriving. Keynote speaker for the morning's opening ceremonies, Dr. Joseph Cappuccio, President-elect of the American Dental Association, was unable to leave home in time for his presentation because of poor weather conditions and arrived later that afternoon.

Allowing more time for visiting commercial exhibits and for the



Dr. Charles W. Ellinger, University of Kentucky, lectures on removable prosthodontics at Tuesday's educational session.

scheduled scientific session, Dr. Gordon J. Christensen, Provo, Utah, got off to an early start on "Restorative Dentistry, 1978" to a packed house. (For a sampling of Dr. Christensen's education session, see "Making Better Prosthodontic Impressions" reprinted from the Chicago Dental Society "Review" elsewhere in this issue.)

Following a late afternoon of "fraternizing" and a special cocktail party for exhibitors, Dr. Litton opened the second general session, resulting in a significant meeting for the future of the Dental Society.



Several dentists view a brief slide presentation at a table clinic on Wednesday morning in the Cardinal Ballroom.

Attendees first heard reports from Dr. Edward U. Austin, Fifth District Trustee; Dr. Harold W. Twisdale, NCD-PAC Chairman; Dr. Raymond P. White, Dean, UNC-CH School of Dentistry; Dr. Benjamin R. Baker, President, N.C. State Board of Dental Examiners; Dr. Norman Ross, President, Dental Foundation of North Carolina, Inc.; Dr. Gordon H. DeFries, Director, Health Services Research Center, UNC-CH; and Dr. Guy R. Willis, Chairman, North Carolina Dental Placement Service Advisory Committee.

The election of Dental Society officers for 1978-79, nominated the evening before, was next on the agenda. All were elected by unanimous voice vote.

Newly elected officers for 1978-79 are:

- President-elect, Dr. Robert J. Shankle, Chapel Hill
- Vice President, Dr. Glenn F. Bitler, Raleigh
- Secretary-Treasurer, Dr. Mitchell W. Wallace, Spring Lake



Newly elected Dental Society President-elect, Dr. Robert J. Shankle, Chapel Hill, and his wife, Nancy.

In addition, the membership voted Dr. James A. Harrell, William A. Hand and D. W. Seifert to continue as A.D.A. Delegates from North Carolina.

The final agenda item, selection of a site for the 1980 Annual Session, was unnecessary, as members accepted a "five year plan" recommended by Dr. Stuart B. Fountain, Chairman of a Special Committee on site selection.



Vice President, Dr. Glenn F. Bitler, Raleigh, addresses the general membership after the election.

After more than 35 years at the Pinehurst Hotel, concern for younger members, coupled with rising costs and the need for a larger exhibit area prompted passage of the plan to move the Society's annual sessions to alternate sites every other year.



Dr. Mitchell W. Wallace, Spring Lake, newly elected Secretary Treasurer, thanks the membership during his acceptance speech.

The plans for the 1979 through 1983 annual sessions are:

—123rd Annual Session, May 13-16, 1979, Pinehurst Hotel, Pinehurst, N.C.

—124th Annual Session, May 11-14, 1980, Hyatt Regency Hotel and Benton Convention Center, Winston-Salem, NC.

—125th Annual Session, May 17-20, 1981, Pinehurst Hotel, Pinehurst, NC

—126th Annual Session, May 16-19, 1982, Radisson Plaza Hotel and Charlotte Civic Center, Charlotte, NC

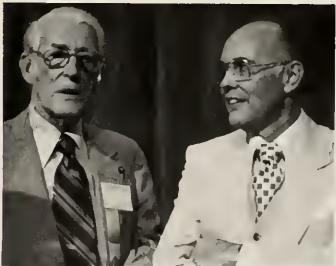
—127th Annual Session, May 15-18,



ADA President-elect, Dr. Joseph Cappuccio, speaks at the Annual Banquet, Tuesday evening, May 16, 1978.

1983, Pinehurst Hotel, Pinehurst, NC

Tuesday brought with it a glimmer of sunshine and chilly Spring weather, and a second scientific session by Dr. Charles W. Ellinger, University of Kentucky, Lexington, on "Minimizing Problems in Removable Prosthodontics." (See "Minimizing Problems in Making Complete Lower Impression" reprinted from the Journal



ADA Delegates from North Carolina, Dr. Ralph Coffey (left) and Dr. James A. Harrell. Dr. Coffey will again serve as Speaker of the House for 1978-79.

of Prosthetic Dentistry, elsewhere in this issue.)

The Annual Banquet and Dance began at 7:00 p.m. in the Cardinal Ballroom with Dr. William A. Mynatt acting as Toastmaster. Dr. Litton was presented his "Past President's Plaque" from immediate past president, Dr. R. B. Barden, and a framed photograph from the front cover of the Winter/Spring North Carolina Dental



The Ronnie Kole Trio, one of New Orleans' most popular groups.

Journal by Editor/Publisher, Dr. Galen Quinn. Dr. Cappuccio, who had been unable to speak to the membership at Opening Ceremonies, stirred the crowd with brief remarks as featured after dinner speaker. Entertainment and dancing music into the wee hours was provided by the Ronnie Kole Trio.

The final day of the Session featured 12 table clinics and the official installation of Dr. J. Harry Spillman, Winston-Salem, as new Society Presi-



Dr. Galen Quinn, (left), North Carolina Dental Society Editor/Publisher, gets an assist from Dr. William A. Mynatt, in presenting a portrait to Dr. Litton. The photo is from the front cover of the Winter/Spring Journal.

dent, together with the other newly elected Society leadership.

The North Carolina Dental Society thanks everyone who helped make the 122nd Annual Session a successful, enlightening and entertaining meeting.



Dr. Litton (right) passes the gavel of leadership to Dr. J. Harry Spillman at the official installation of officers Wednesday morning, May 17, 1978.

DEFORMITY OF THE FACE JAWS AND DENTITION

A PREVENTABLE DISEASE

NASAL OBSTRUCTION

Galen W. Quinn, D.D.S., M.S.*
Kenneth L. Pickrell, M.D.**

Dramatic deformities of the face, jaws and dentition can be caused by the inability to *breathe through the nose properly*. They are most easily observed because they are about the only parts of the body that are usually uncovered. Adverse changes that occur in other parts of the body are not so easily demonstrated and may require more elaborate examination procedures to observe and evaluate.

In recent years many heroic, corrective surgical procedures have been developed to place malformed and malposed parts of the cranium, face, jaws and dentition into healthier functioning positions.^{1,2} There have been many classifications of deformities developed and many devices, machines and medicines manufactured to treat them, however, not as much progress has been made in determining the *causes* and how to *prevent* them.

There are many individuals in our population with orodentofacial deformities that remain untreated because of inadequate diagnosis and there are many more that could be prevented with proper diagnosis at an early age. Early age is defined to be as soon as unnatural function of the breathing process can be observed or as soon as an anatomical deformity can be recognized: Mouthbreathing is one of the early symptoms of improper or unnatural acts of breathing. The act of *mouthbreathing is not a habit*, it is an *unnatural act of necessity* to get air into the lungs because of an obstruction or interference in the nasopharyngeal or nasal areas.

The case history presented demonstrates that there was definitely an early nasopharyngeal obstruction by way of enlarged adenoids and tonsils which was not only the cause of ear and throat problems, but was also a contributing factor in the development of the nasal obstruction.

Diagnosis: Deformities of the face, jaws and dentition manifested by:

1. Improper vertical and anteroposterior relationship of the face, jaws and teeth (long face syndrome).

2. An Angle Class II cusp relationship (mesiocclusion), anterior openbite, lingual axial inclination of alveolar process and teeth, narrowing of the maxilla, palate, dental arches and nasal cavities, crowding of teeth, severe hypertrophy of gingiva, degenerative gingivitis, loss of alveolar bone, gingival bleeding and a difficult oral hygiene program.

3. Hypoxic pallor and lack of tonus in the facial tissues, puffiness of the upper eyelids, underdevelopment of nasal structures and infraorbital tissues, a hypotonic, short maxillary lip, a hypertonic mandibular lip and mentalis muscle (puckered).

Etiology: Airway interference — Septum deformity (deviation) and enlarged turbinates.

Medical History: A medical history for her childhood was not available and her hospital history regarding surgery on her ears and lymphoid tissues was not made available.

According to her personal recognition she had "lots of earaches, lots of sore throats (at least until my surgery at — Hospital in 1963) and I could only breathe through my mouth. The surgery in 1963 was to remove my adenoids for a second time, and remove some kind of ear blockage I had because of the adenoid problem. The surgery was successful in that I no longer had the terrible earaches I'd been suffering and I could hear much better. I was told then that I did have some small amount of hearing loss that surgery could not correct."

Dental History: Previous orthodontic treatment included the extraction of four first bicusps — a relapse evidently occurred since a severe malocclusion was present.

Treatment Plan: 1. Eliminate airway obstruction.

2. Expand maxilla and maxillary and mandibular dental arches.

3. Institute extraoral forces — chin-cap and headgear.

4. Place orthodontic appliances on all teeth to upright and align.

5. After 1 year of treatment re-evaluate face height and occlusion.

Treatment: 1. Dermabrasion of the face for acne scars.

2. Subtotal removal of the septum, reduction of turbinates, upper lip lengthening and obliteration of buccalveolar sulcus.

3. Chin-cap therapy

4. Orthodontic treatment.

Results: 1. The dramatic results in 1 year from the elimination of the airway interference are self evident.

2. Orthodontic treatment is progressing satisfactorily and the estimated length of treatment time is 1 year.

Lesson to be learned —

The case again demonstrated that the lymphoid tissue is not the only cause of airway interference. Nasal obstruction was present for 26 years and was the major cause of the problem. The case illustrates the need for recognizing nasal deformities and eliminating them at an early age. Proper removal of aberrant structures at a young age *will not* cause a deformity, but *retention* of the structures will.

It is apparent that a different attitude by primary care persons towards growth and development of the face and jaws is in order and that present methods of examining airway capabilities are inadequate.³

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Age 25 years 11 months



Age 26 years 7 months



Age 25 years 11 months



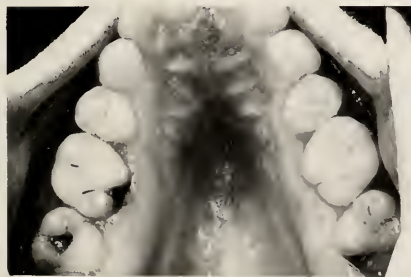
Age 26 years 7 months



Age 26 years 7 months



Age 25 years 11 months



Age 25 years 11 months



ANTERIOR ROOT
RESORPTION
RR 25 11yrs



Age 25 years 11 months



History of Recurrent Sore Throat as an Indication for Tonsillectomy

Predictive Limitations of Histories That Are Undocumented

Jack L. Paradise, M.D., Charles D. Bluestone, M.D., Ruth Z. Bachman, R.N., B.S.,
Gheorgann Karantonis, R.N., B.S., Ida H. Smith, Carol A. Saez, D. Kathleen Colborn, B.S.,
Beverly B. Bernard, R.N., B.S., Floyd H. Taylor, Sc.D., Robert H. Schwarzbach, B.A.,
Herman Felder, M.D., Sylvan E. Stool, M.D., Andrea M. Fritz and Kenneth D. Robers, M.D.

The controversy concerning the care or treatment of the tonsils, adenoids allergies and infectious processes of the nasal structures is of vast importance to the growing child, parents and medical care persons. The authors have and are attempting to bring some sort of order in diagnosis and treatment of the problems.

Abstract As part of a prospective study of indications for tonsillectomy and adenoidectomy, we followed closely 65 children with histories of recurrent throat infection that seemed impressive (at least seven episodes in one year, five in each of two consecutive years or three in each of three consecutive years), but lacked documentation. During the first year of observation, only 11 children (17 per cent) had episodes of throat infection with clinical features and patterns of frequency conforming to those described in their presenting histories. Of the remaining 54 children, 43 (80 per cent) experienced no, one or two observed episodes each, and most of the episodes were mild.

We conclude that undocumented histories of recurrent throat infection do not validly forecast subsequent experience and hence do not constitute an adequate basis for subjecting children to tonsillectomy. (N Engl J Med 298:409-413, 1978)

As an indication for tonsillectomy, a history of recurrent episodes of throat infection is viewed quite differently by different authorities. Some favor its use but leave unspecified the minimum number of episodes that would justify tonsillectomy^{1,2}; others suggest specific, limiting guidelines (e.g., five or more episodes in each of two successive years³), and still others oppose its use as an indication entirely.⁴ Differences among authorities aside, a history of recurrent throat infection remains the indication for tonsillectomy most commonly advanced by parents⁵ and invoked by physicians,⁶ and constitutes a principal criterion in current quality-of-care standards for the reasonableness of tonsillectomy.⁷⁻¹¹

Recommending tonsillectomy on the basis of a history of recurrent throat infection rests on two related assumptions: that in a given child, the frequency and severity of throat infections in the past will be generally predictive of their frequency and severity in the future; and that when morbidity from throat infection seems excessive, the efficacy of tonsillectomy will outweigh its cost and its risks. Neither of these assumptions has been adequately tested.¹²⁻¹⁴

We are currently addressing both assumptions as part of a prospective study of indications for tonsillectomy and adenoidectomy. Since both assumptions have as their starting points a history of past illnesses, the validity of individual histories is an important issue in the study, and subjects are needed whose histories of recurrent throat infection are well documented. Such children are being enrolled and followed, but their number and the duration of their follow-up observation do not yet warrant definitive analysis of their findings. More avail-

able to us for study have been children whose histories of recurrent throat infection, while impressive, have been relatively undocumented. From a health-care standpoint, such children constitute an important class because, despite the lack of documentation of their histories, they are often regarded as appropriate candidates for tonsillectomy and often receive tonsillectomy. The present report describes, in a group of such children not initially offered tonsillectomy, the occurrence of throat infections and related symptoms as monitored prospectively.

Methods and Subjects

A study aimed at establishing rational indications for tonsillectomy and adenoidectomy was begun at the Children's Hospital of Pittsburgh in August, 1971, and is still in progress.¹⁴⁻¹⁶ To enter a randomized, controlled clinical trial of tonsillectomy or adenoidectomy or both, study subjects are required to meet defined eligibility criteria. For tonsillectomy, recurrent throat infection constitutes a sufficient criterion provided the infection episodes meet defined standards with regard to frequency of occurrence, clinical features, mode of treatment and documentation. The *frequency* standard requires a minimum of either seven episodes in the preceding year, or five episodes in each of the two preceding years, or three episodes in each of the three preceding years. The *clinical-features* standard requires each episode to have been characterized by one or more of the following: oral temperature of 38.3°C (101°F) or higher; enlarged (> 2 cm) or tender cervical lymph nodes; tonsillar exudate; or positive culture for Group A beta-hemolytic streptococcus. The *treatment* standard requires that an-

From the Ambulatory Care Center of the Children's Hospital of Pittsburgh and the departments of Pediatrics, Community Medicine, and Otolaryngology, University of Pittsburgh School of Medicine (address reprint requests to Dr. Paradise at the Children's Hospital of Pittsburgh, 125 DeSoto St., Pittsburgh, PA 15213).

Supported by a grant from the Dr. E. R. McCluskey Memorial Research and Program Fund of the Children's Hospital of Pittsburgh, and by a grant (HD-07403) from the National Institute of Child Health and Human Development.

Presented in part at the annual meeting of the American Academy of Ophthalmology and Otolaryngology, Las Vegas, NV, October 10, 1976.

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tibiotics in adequate amounts had been administered for proven or suspected streptococcal episodes. And the documentation standard requires that each episode and its qualifying features be substantiated by a notation in a clinical record at the time of occurrence. (Data from an outside hospital or office records are often obtained by mail or telephone.) Many of the subjects have histories of episodes that appear to meet all the defined standards except documentation; such subjects are followed prospectively, and if at least two observed episodes of throat infection then develop with patterns of frequency and clinical features conforming to those described in their presenting histories, they become eligible for the tonsillectomy trial.

Each subject is followed by means of a standardized telephone inquiry biweekly concerning the day-to-day occurrence of a defined group of symptoms, including sore throat, and by clinical examination at least every six weeks and on the occasion of any respiratory illness deemed other than a common cold. Data concerning symptoms are recorded only if collected within 18 days of occurrence. Parents are urged to bring children for examination for even mild symptoms. (Parents are not charged fees for study-related tests or services, and reimbursement is offered for expenses incurred in traveling to the hospital.)

All data are obtained and all examinations conducted by study personnel, who use standardized systems for quantifying, rating and recording observations. Inter-observer comparisons are made frequently to assure reliability.

A "sore-throat episode" is defined as the occurrence of sore throat as a complaint, or signs of inflammation of the throat on examination, or both, during a discrete period involving either a day or a succession of days provided that no interruption in their sequence exceeds nine days. Once a standard regimen of antibiotic treatment for an episode has been maintained for 10 consecutive days or longer, either the persistence of symptoms or their recurrence after any interval is considered a new episode.

Episodes are grouped into five categories related to the apparent presence or absence of throat infection. Each category has highly specific criteria that because of their considerable detail are not presented in full in this report. Categories I and II are episodes during which the child is ob-

served clinically by the study team, and Categories III, IV and V episodes reported by parents but not observed clinically by the study team. The classification of episodes is as follows:

Category I — observed throat infection. These episodes may or may not be accompanied by a specific complaint of sore throat. When there is such a complaint, there must be a clinical observation of inflammation of the tonsils or pharynx or both, or new findings of cervical lymphadenopathy and a positive throat culture for Group A beta-hemolytic streptococcus. When there is no complaint of sore throat other clinical findings must support a diagnosis of tonsillitis or pharyngitis or both.

Each Category I episode is graded as "mild," "moderate" or "severe," on the basis of degree of fever, altered behavior and discomfort, and of findings on examination of the pharynx and cervical lymph nodes. Specifically not taken into account in this grading system are the presence or absence of tonsillar exudate or the recovery of streptococci from the pharynx — features that, although important in characterizing and categorizing episodes, often seem independent of clinical severity.

Category II — sore-throat complaint without evidence of infection. These episodes are accompanied by sore throat as a complaint but not by clinical findings sufficient to support a diagnosis of tonsillitis or pharyngitis.

Category III — unobserved sore throat without accompanying respiratory symptoms. These episodes, reported by parents but not incorporating a clinical examination, consist of two or more days of sore-throat complaint *unaccompanied* by coryza or cough.

Category IV — unobserved sore throat with accompanying respiratory symptoms. These episodes, reported by parents but not incorporating a clinical examination, include two or more days of sore-throat complaint *accompanied* by coryza or cough or both.

Category V — unobserved minor and sundry sore throats. These episodes, reported by parents but not incorporating a clinical examination, comprise one day or less of sore-throat complaint, or a period of any length in which such a complaint is attributable to an extraneous event (e.g., varicella or intubation anesthesia for an operation).

Results

Subpopulation for Present Report

Of 311 children enrolled during the three-year period January 1, 1973, to December 31, 1975, and considered suitable for study, 95 had initial histories of recurrent episodes of throat infection that met all the protocol-defined standards for the tonsillectomy trial except the standard requiring documentation. Of these 95 subjects, 65 were followed closely as described above for a minimum of one year. Table 1 shows the age and sex

Table 1. Age on Entry and Sex of Study Population.

Age (Yr.)	No. of Subjects	
	M	F
2	0	2
3-4	10	7
5-6	6	8
7-16	12	20
Totals	28	37

distribution of the 65 subjects, and Table 2 the distribution, taken from their presenting histories, of clinical features of their previous episodes of throat infection. Tonsillar size at the time of entering the study was rated on a 0-to-4 + scale¹² as 1 + in six subjects, 2 + in 23, 3 + in 34 and 4 + in two.

Table 2. Clinical Features of Previous Episodes of Throat Infection as Described in Undocumented Histories in 65 Subjects.

Clinical Feature	Occurrence of Feature During Episodes (%)		
	Usually	Occasionally	Rarely; Never or Uncertain
Oral temperature $\geq 38.3^\circ\text{C}$ ($\geq 101^\circ\text{F}$)	63	26	11
Examination by physician	52	32	15
Enlarged or tender cervical lymph nodes	75	9	15
Throat culture taken	17	29	54
Antibiotic administered	71	20	9

Observed Episodes of Throat Infection

During the first year of observation, 11 (17 per cent) of the 65 subjects became eligible at some point to enter the tonsillectomy trial because observed episodes of throat infection developed with clinical features and patterns of frequency conforming to those described in their presenting histories. Table 3 presents the details of this outcome.

Table 4 shows that of the 54 subjects who did not become eligible, 43 (80 per cent) experienced either no, one or two observed episodes each throughout the year. Ten subjects experienced three episodes each, and one ex-

perienced four episodes, but many of these episodes (16 of 34) failed to meet the protocol-defined clinical-features standard, and the distribution of episodes among the 11 subjects was such that none of them reached eligibility. Of the total of 89 observed episodes, 57 (64 per cent) were considered mild, 23 (26 per cent) moderate, and 9 (10 per cent) severe. Throat cultures for Group A beta-hemolytic streptococcus were recorded in the course of 83 of the episodes, and were positive in 30 (36 per cent).

Taken together, Tables 3 and 4 also indicate that despite the described past differences between them, the three history-based subgroups ($\geq 7 \times 1$; $\geq 5 \times 2$; $\geq 3 \times 3$) experienced similar patterns of illness after coming under close observation.

Twenty-two of the 54 subjects were followed for a second year. Of these, one reached eligibility for the tonsillectomy trial because of recurrent infection, and two because of obstructive symptoms. Seven experienced no episodes of throat infection, seven one episode each, and five two episodes each. Thirteen of the 17 episodes were graded as either mild or moderate.

Complaints of Sore Throat in Relation to Observed Episodes

Because it was not practical to examine each subject for each complaint of sore throat, it seemed likely that a tabulation limited to observed episodes of throat infection would underestimate total morbidity due to inflammatory throat disease. Accordingly, the monitored, day-to-day occurrence of complaints of sore throat was reviewed to ascertain whether or not subjects were concurrently examined, and to learn the findings when examinations occurred.

Regarding the 54 subjects not reaching eligibility for the tonsillectomy trial during the first year, information was available for a total of 18,539 patient-days (mean of 343.3 days per subject per year). Of this

total, sore throat occurred in the course of 5.5 per cent, or 1017 patient-days. Table 5 shows that 744 (73.2 per cent) of these patient-days of complaint were associated with episodes observed clinically (Categories I and II). Of the remaining 273 patient-days, nearly half were associated with episodes that seemed minor or attributable to a common cold or an extraneous event (Categories IV and V). These data, together with the fact that findings suggesting throat infection were rarely noted on routine follow-up visits among subjects who had been asymptomatic, indicate that the surveillance of these subjects afforded a reasonably comprehensive picture of the occurrence of clinically apparent throat infections.

Table 4. Observed Episodes of Throat Infection during First Year of Observation in Subjects Not Reaching Eligibility for Tonsillectomy Trial.

Undocumented History of Episodes of Throat Infection Before Entry Into Study	Total No. of Subjects	No. of Episodes Observed					Total No. of Episodes
		0	1	2	3	4	
		no. of subjects					
≥ 7 in 1 yr	21	3	6	7	5	0	35
$\geq 5 \times 2$ yr	6	1	1	3	1	0	10
$\geq 3 \times 3$ yr	27	3	10	9	4	1	44
Totals	54	7	17	19	10	1	89

Table 5 also shows that of the 128 sore-throat episodes that were observed, 39 (30.5 per cent) lacked clinical features that would support a diagnosis of throat infection (Category II).

Subject Characteristics in Relation to the Occurrence of Illness

Associations were examined in an effort to determine whether particular characteristics of study subjects appeared to favor the likelihood that subsequent episodes of throat infection would develop. Considered as possible predisposing factors were age on entry; sex; estimated reliability of the initial history; family socioeconomic status; a history that previous episodes had usually been accompanied by fever, lymphadenopathy or antibiotic treatment; and tonsillar size on entry. Of these factors female sex, high estimated reliability of the initial history, and upper socioeconomic ratings were found more often in the 11 subjects who attained eligibility for the tonsillectomy trial during the first year than in the 54 who did not, but in no case did the degree of association achieve statistical significance. Furthermore, in the 54 subjects not attaining eligibil-

ity, none of the three characteristics were highly correlated with either the number or the severity of episodes of throat infection that did occur.

Table 5. Patient-Days of Sore-Throat Complaint According to Type of Episode.*

Type & Category of Episode†	No. of Patient-Days of Complaints	No. of Episodes	Complaint Days/Episode‡
Observed			
I	546	89	6.1 (0-35)
II	198	39	5.1 (1-15)
Unobserved			
III	142	40	3.6 (2-14)
IV	81	21	3.9 (2-14)
V	50	43	1.2 (1-5)
Totals	1,017	232	4.4 (0-35)

*1st yr of observation in 54 subjects not reaching eligibility for tonsillectomy trial.

†See text for definitions.

‡Mean, with range in parentheses.

Discussion

The data presented here demonstrate that among a group of children with histories of recurrent episodes of throat infection that seemed impressive but lacked documentation, a majority experienced few if any episodes after coming under close scrutiny, and most of the episodes that developed were mild. These findings applied irrespective of any other identified subject characteristics, singly or in combination.

Why the Discrepancy?

There appear to be a number of possible explanations for a discrepancy in the frequency and severity of throat infections between those in the past, as described by parents, and those that are observed prospectively thereafter. In the first place, the histories may be valid, and the reduction in illness real. A number of studies¹⁷⁻²¹ have reported progressively less respiratory illness among children as they grow older (although none of the studies dealt with throat infection specifically, and one²⁰ explicitly excluded episodes of throat infection from consideration). Secondly, certain parents may deliberately exaggerate the frequency and severity of previous episodes in an effort to persuade the physician or surgeon that operation is indicated. Thirdly, a number of factors — anxiety, impatience with the inconvenience and cost of frequent physician visits, concern about repeated courses of antibiotic treatment, preconceptions or wishful thinking concerning the effects of tonsillectomy, and pressure for tonsillectomy from others — may lead parents to exaggerate previous morbidity unconsciously. And

(Continued on page 53)

Table 3. Attainment of Eligibility to Enter Tonsillectomy Trial during First Year of Observation.

Undocumented History of Episodes of Throat Infection Before Entry Into Study	Totals	Subjects Reaching Eligibility
≥ 7 in 1 yr	27	6 (22%)
≥ 5 yr $\times 2$ yr	7	1 (14%)
≥ 3 yr $\times 3$ yr	31	4 (13%)
Totals	65	11 (17%)

MANDIBULAR HYPOPLASIA AND AIRWAY INTERFERENCE

ENDANGERMENT OF LIFE AND IMPAIRMENT OF HEALTH LARYNGEAL-PHARYNGEAL OBSTRUCTION

Galen W. Quinn, D.D.S., M.S.*, Kenneth L. Pickrell, M.D.**

PROPER BREATHING is necessary for a healthy body and life can be endangered or severe health impairment can result from an airway obstruction or interference. Mandibular hypoplasia (small mandible or lower jaw), congenital or acquired, unilateral or bilateral can cause an airway interference or occlusion of the airway in the laryngeal-pharyngeal region and is a result of improper position of the tongue. It can be corrected by a surgical-orthodontic procedure and the teeth are necessary to facilitate proper, successful treatment.

Two cases of mandibular hypoplasia are presented to illustrate the orodentofacial and other physical characteristics of airway interference¹ and the dramatic, almost immediate changes that can occur with improved breathing capabilities.

* * *

The 19 year history recorded in Figures 1-14 illustrates an acquired, bilateral mandibular hypoplasia with a history of juvenile rheumatoid arthritis.

Severe asymmetry of the mandible was present at age 12 years with the left side being much shorter than the right.

Asymmetries of the face, jaws and cranium are the result of muscular imbalance, improper posture, disturbance of growth centers during the growing period and trauma or disease at any time. Muscular imbalance is the most frequent cause of asymmetry and is the result of a required, improper posture of the mandible to breathe. Oriented lateral and AP radiographs are most essential to properly demonstrate and evaluate craniofacial asymmetries.

Muscular contraction, pressures due to the prolonged prone posture required by body immobility or both, produced the astonishing resorption of the rami. The extreme deviation of the mandible to the right, the evulsion of the mandibular left cuspid and the extreme buccal crossbite of the maxillary left molars demonstrates the influences of excessive pressure to the mandible.

Changes in soft tissues, impairment of general health and endangerment of life were also experienced. An emergency tracheostomy was performed to sustain her life. The anoxic pallor, puffiness of the upper eyelids and the dramatic general physical recovery led to the review of similar, treated cases which is the background for the present ongoing studies on airway interference.

Orthodontic treatment was started at age 12 years to correct an Angle Class II malocclusion (mesioclusion) of the teeth. Muscular imbalance of the

facial muscles, lips, cheeks and tongue (especially tongue posture) was considered to be the etiology of the malocclusion. *Inability to breathe properly* through the nose was considered to be the cause of the muscular imbalance. Airway interference was manifested by enlarged or hypertrophied tonsillar and adenoid tissues (lympoid) and nasal obstruction which was a result of a septum deformity (deviation) and enlarged or hypertrophied turbinates.

A history of mouthbreathing, throat and ear infections associated with chronic adenoiditis and tonsillitis resulted in a recommendation to remove the tonsils and adenoids. The T and A performed at age 12 years offered some relief, but the removal of lymphoid tissue did not provide an adequate airway (as in so many other cases). Evaluation of breathing capabilities with the mouth clamped shut would have indicated difficulty in breathing through both nasal cavities, especially the left.

With the knowledge available today, surgical correction of the septum deformity and reduction of the enlarged turbinates would have been recommended. *This one act* could have had a profound effect on her general health before and especially during her prolonged bed confinement since breathing becomes more difficult in the prone position due to an increase in fluid and blood pressure in the head region.

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**Professor, Plastic, Maxillofacial Surgery, Duke University Medical Center, Durham, N.C.

The increased pressure in the head is due to gravity and as the fluid pressure increases, the size of tissues in the nose become enlarged. If there is any difficulty breathing in an upright position then certainly breathing becomes more difficult in the prone position — snoring, wheezing, loud breathing and gasping for air results.

Results of the surgical orthodontic treatment established life sustaining breathing capabilities even though a nasal obstruction still prevents proper breathing. Through and with the tender loving care of her parents, friends and health care individuals, the young lady enjoys a useful and happy life.

* * *

The 21 year 8 month history recorded in Figures 15-26 illustrates a congenital, bilateral mandibular hypoplasia with a history of congenital absence of condyles, coronoid processes and rami with ankylosis of a rudiment of the ramus on the right side. Ten previous surgical attempts had been made to correct the problem.

The history of the problem illustrates a life long struggle of poor general health, the inability to masticate food, difficulty in speaking, swallowing, maintaining an oral hygiene program and more importantly the *inability to breathe properly*.

Results of a proper surgical-orthodontic procedure allowed adequate mouthopening and ten years later was still able to eat about anything she wanted. She was also able to speak well, and earned an advanced academic degree.

* * *

TREATMENT PROCEDURES:

The objectives of the surgical-orthodontic treatment procedures were primarily to:

1. Re-establish adequate breathing capabilities for general health.
2. Restore the vertical and anteroposterior relationships of the maxilla to the mandible.
3. Enhance speaking capabilities.
4. Restore or provide a mechanism to masticate food and exercise tissues of the face, jaws, oral cavity and teeth.
5. Enable opening of the mouth so that proper care of the teeth, their supporting structures and tissues of the oral cavity can be cared for properly.

In the first case orthodontic appliances were placed succeeding a tracheostomy and prior to the first surgery to the mandible. A bilateral, vertical osteotomy was performed during the first surgery and a stabilizing occlusal splint was placed which allowed the generation of new and relaxation of old tissues. The second phase of surgery, under a local anesthetic, was to further elevate tissues attached to the posterior portion of the mandible and to place traction wires in the posterior inferior border of the mandible. External traction forces to the mandible were applied for approximately 1 week in the hospital and 2 weeks at home. The traction force applied a heavy, continuous stretching force during and after the healing period to accomplish over correction. Class II triangular interarch elastic forces were applied for approximately 2 years.

* * *

In the second case maxillary and mandibular archbars were placed since the extent of mouth opening would not permit orthodontic banding procedures. Under general anesthesia a posterior submandibular approach was made to surgically relieve ankylosis of the mandible. As soon as the ankylosis was relieved, dental impressions were made in the operating room for an occlusal splint. Traction wires were placed by way of holes in the posterior inferior region of the mandible and a K-wire through the body of the mandible in the region of the first bicusps. External traction was applied for approximately 10 days, then an occlusal splint was placed and maintained for 1 month. Subsequent to removal of the splint all teeth were banded and Class II interdental elastic forces were maintained for about 9 months.

It would have been most gratifying if all problems could have been corrected in one stage, but this was not possible because of the underdevelopment and atrophy of the blood supply, nerve innervation and lack of soft tissue.

Restoration of missing bone in the mandible was not accomplished in the first case because it was not known if the arthritic condition was active or arrested. In the second case, grafting

was not performed due to severe scarring from previous surgery and also due to the lack of soft tissue. Adequate function for most purposes was provided in both cases.

Although the results achieved were most acceptable, they could not have been achieved without teeth and if the teeth are lost a most challenging restoration problem will exist.

* * *

SUMMARY AND CONCLUSIONS

1.) The functions of mastication, speech and deglutition can be carried out in a life sustaining manner without condyles, coronoid processes or rami.

2.) Not all airway problems are so dramatic as in the two cases demonstrated. It is therefore necessary to be able to detect and interpret minor tissue changes or discrepancies and incipient muscle imbalances that can cause micromalocclusions or deformities of a lesser degree.

3.) Efforts should be directed towards the determination and elimination of the causes of malocclusions and deformities before attempting to treat the condition that exists.

4.) Our longitudinal studies concur with findings of others² and confirm that the posture and tonus of the muscles of the face, jaws (soft tissues) can determine the configuration and position of the hard tissues.

5.) Teeth are most essential to treat hypoplasias of the mandible which cause health problems and may be life endangering.

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Fig. 1. Age 11 years 4 months
Note hypertonic facial tissues, puffiness of upper eyelids, flatness of infraorbital tissue, asymmetry of the nose, lips and face, a hypotonic short upper lip, a hypertonic lower lip and mentalis muscle



Fig. 2. Severe malocclusion of teeth with forward positioning of the maxillary teeth, an anterior openbite from the first molar forward, constricted maxilla, crowding of teeth, prominence of roots, mandibular midline to the left, occlusal plane elevated on the left side, and severe gingivitis



Fig. 3.
(a) upward and forward rotation of the craniofacial complex in relationship to the vertebral column
(b) enlarged adenoid mass
(c) enlarged turbinates
(d) anterior floor of the nasal cavity and nasal spine are elevated
(e) openbite from the 1st molar forward
(f) downward and forward posture of the tongue

Fig. 4.
(a) note asymmetry of the orbits in relationship to the rest of the cranium
(b) asymmetry of the nasal cavities
(c) septum deformity with deviation to the right
(d) enlarged turbinates
(e) severe asymmetry of the mandible to the left
(f) marked shortness of the left ramus
(g) elevation of the occlusal plane of the left



Fig. 5. Age 21 years 11 months — Pronounced puffiness of upper eyelids, anoxic pallor, upward and forward rotation of the craniofacial complex and loss of tissue tone, emergency tracheostomy



Fig. 6. (a) nearly complete occlusion of the airway from the cricoid process to the soft palate
(b) severe upward and forward rotation of the craniofacial complex in relationship to the vertebral column
(c) retrognathia of the mandible
(d) shortened vertical dimension of the ramus
(e) Age 12 and 22 years — lateral radiographs superimposed note change in maxillary growth and severe resorption of the ramus (condyle and coronoid process)



Fig. 7. Age 21 years 11 months — Note evulsion of the mandibular left cuspid and buccal position of the maxillary left molars

Fig. 8. Age 21 years 11 months 15 days — vertical osteotomy — occlusal splint in place

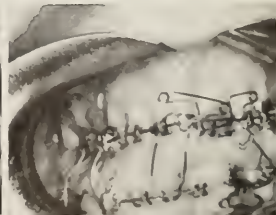
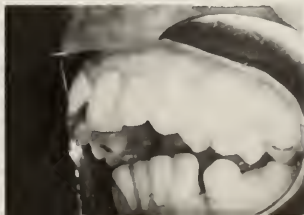
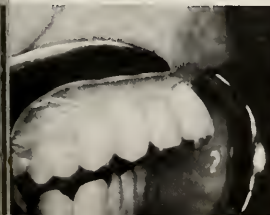




Fig. 9. External traction 3 to 5 lbs.



Fig. 10. Age 22 years. Note loss of puffiness of the upper eyelids, return of tissue tone and color, and correction of the mandibular retrognathia



Fig. 11(a). External weights continued after the "over the end of the bed" traction was discontinued

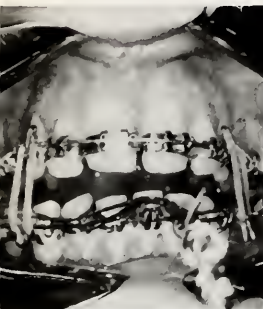


Fig. 11(b). Up and down triangular elastics placed while extra oral weights not in use



Fig. 11(c). Age 22 years 1 month 18 days — forces discontinued Note enlarged holes in angle of mandible



Fig. 12. (a) 3-29-59 11 years 4 months
(b) 1-19-62 post orthodontic treatment
(c) 1-4-67 progress evaluation
(d) 9-11-69 presurgical

Fig. 13. 29 years 5 months. Functional occlusion (Note "ribbing" or thinness of alveolar bone and gingiva)



Beautiful





Fig. 14. Age 9 years 7 months

(a) note "anxious" appearance, puffiness of upper eyelids, hypotonic, pale, upper lip, hypertonic lower lip, wet-dry line, chapped and cracked lips, facial asymmetry to the left and asymmetry of the nose and lips



Fig. 15. Note flatness of infraorbital tissues, retrognathia of the mandible and scars from previous surgery.



Fig. 16. Age 4 months

(a) anterior openbite
(b) retrognathia of the mandible
(c) rudiments of ramus, condyles and coronoid processes
(d) note upward and forward rotation of the craniofacial complex to the vertebral column



Fig. 17. Age 15 years 11 months — Operation to relieve ankylosis and provide function

(a) Same expression and facial characteristics as in Fig. 15a.
(b) Banked cartilage graft to chin
(c) Etheron implant to side of the face



Fig. 18.

(a) Note craniofacial posture, openbite, deformity of the nose, retrognathia of the maxilla and mandible and hypoxic pallor



Fig. 19. Extent of mouth opening

Fig. 20. Age 16 years — Remaining mandible



Fig. 21. Extraoral traction. 3 to 5 lbs. of weights employed



Fig. 22. (a) Frontal mandible pin in place. Note dramatic change in eyes, face, lips, mandibular posture and loss of pallor



Fig. 23a. Age 15 years 11 months

- (1) constriction of airway between tongue, other sublingual tissues and the pharyngeal wall
- (2) site of ankylosis-upper right maxillary tuberosity region
- (3) "bent" posterior position of the mandible
- (4) upward and forward rotation of the craniofacial complex
- (5) curvature of the cervical vertebrae
- (6) anterior openbite
- (7) root resorption on the maxillary anterior teeth
- (8) "bridging of bone or calcification in sella turcica



Fig. 23b. Age 17 years 2 months 10 days. Improved airway



Fig. 23c. Age 21 years 11 months. 6 years post treatment maxillary occlusal plane level. Note resorption of the cartilage implant and adjacent bone of the mandible due to pressure.



Fig. 23d. Age 21 years 11 months. Mandibular movements possible

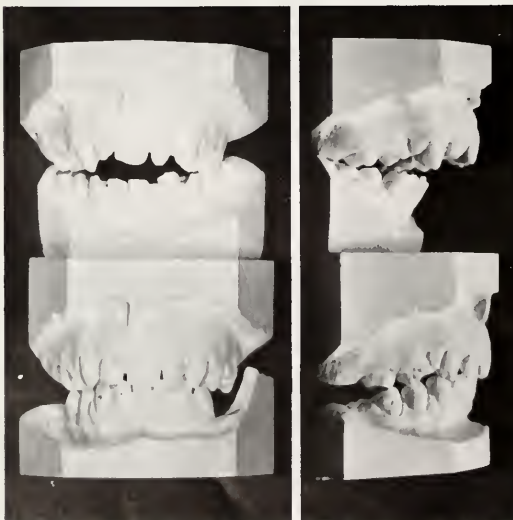


Fig. 25. Age 15 years 11 months and 21 years 11 months. Occlusion remained stable

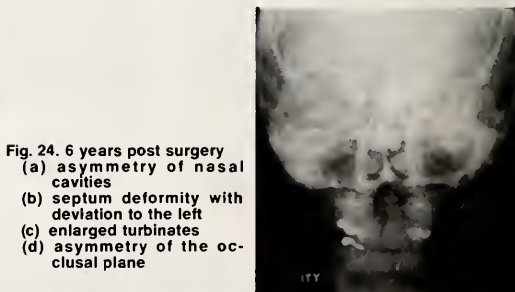


Fig. 24. 6 years post surgery
(a) asymmetry of nasal cavities
(b) septum deformity with deviation to the left
(c) enlarged turbinates
(d) asymmetry of the occlusal plane



Fig. 26. Age 21 years 11 months
Beautiful!

The First Visit to the Cleft Palate Team: Psychological Counseling with Parents

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INTRODUCTION

Some time usually elapses before a baby with a cleft first comes to Duke University Medical Center for evaluation and treatment by the cleft palate team. The babies we see come from every county in North Carolina, as well as some surrounding states. Typically, the baby is born in one of the hospitals associated with a local community. Usually the infant is approximately 2-4 weeks of age at the first visit to Duke.

There can be little doubt that giving birth to a baby with a cleft evokes a number of negative feelings, for it is rare that any mother or father is emotionally prepared for this to happen. In addition, since the birth of a baby with a cleft is unanticipated, it is probably difficult for many hospitals to provide the much needed support system for the parents. While hospitals are geared for meeting crises associated with the maintenance of life, usually they are not equipped equally for dealing with emotional crises. Giving birth to a child with a defect precipitates such a crisis.

In recalling their experiences, the parents I interviewed stated that the support they received was haphazard. In no case was formal psychological counseling offered. Typically, mothers and fathers reported that information was given them in a piece-meal fashion by the physician or a nurse. A few parents were introduced to other parents whose children were born with clefts. Some health professionals performed admirably, as did some parents of children with clefts. For the most part, however, the only support parents received at the time of the baby's birth took the form of an assurance that the defect could be fixed.

While there may be highly emotional responses to the birth of an infant with a defect, a period of time follows during which parents assimilate informa-

tion about the new baby. The initial shock, immediately after the birth, gives way to attempts to cope with the situation as plans are made to take care of the baby and to have the defect corrected by cleft palate specialists. Thus during the interval between the baby's birth and the first visit to the cleft palate team at Duke University Medical Center, parents have begun to come to grips with problems of infant feeding, infant care, and the general modification of household routines accompanying the birth of a baby.

At the same time, many parents begin to raise questions about cleft lip-palate. They search familial histories for the presence of clefts; they review the history of the pregnancy and they may pay specific attention to the mother's smoking, drinking, or medication use. Frequently they want to know more about clefts, but they don't know where to seek the information.

These questions, doubts, and uncertainties are explored with the parents when they arrive for the initial visit with the cleft palate team. At Duke University Medical Center, we stress the importance of psychological counseling with parents, particularly at the initiation of cleft lip-palate management. I would like to share with you some of my experiences as a psychologist with the cleft palate team for the past 13 years.

Initial Parent Concerns

When I first see the baby with his parents, typically the mother and father are bewildered. For many of the parents, this is their first visit to a large hospital and the environment is strange to them. In addition, most parents do not know why they are seeing a team of specialists when only the simple matter of closing a cleft is involved. The parents especially do not under-

stand why they are seeing a psychologist.

The bewilderment and confusion, frequently present at the first interview, presents a good place for the psychologist to start. After obtaining routine background information for a few minutes, an attempt is made to find out what the parents know about cleft palate. I lead the parents in a discussion about the child's cleft and their perceptions of possible causative factors. Illness during pregnancy, some unusual event, medication, and even folklore may be mentioned. Most frequently, the family has no explanation, since the pregnancy may have been uneventful and there is no history of clefting in the family. Starting from the parents' point of view, I can give them relevant information about the nature of clefts in terms of when it occurs in the developmental process. Although, quite obviously, there are no definitive or absolute explanations, the concept of multifactorial causation can be presented in a simple manner. Using this approach, the roles of disease, drugs, feelings, experiences, folklore, and heredity in clefting can be presented for their evaluation. I find it important to stress the timing of the clefting process because frequently it helps parents to sort out their own ideas about causation. For example, they learn quickly that environmental occurrences cannot cause a cleft to occur retroactively. It is vital, however, that the discussion be based on the understandings and information that parents bring to this initial counseling session.

The next phase of the relationship is crucial. Parents are encouraged to ask questions about what they have been experiencing during the evaluation process with our cleft palate team. This permits me to determine how adequately they have assimilated the information already given to them by

other members of the cleft palate team. Most frequently, the parents' primary questions stem from their concerns about surgery. Even though they have seen the plastic surgeon and have spent some time with him, still they may be confused because their anxieties interfere with their ability to comprehend. They are convinced the surgeon will do an outstanding job for them; but they seek reassurance about other details. "How long will surgery take?" "Will I be able to stay with my baby?" "Will there be much pain?" "Is it safe to operate on babies?"

As these questions are answered, other questions and discussions about the baby's future come to the fore. Here the basis for future relationships is being established. Parents learn that their questions will be answered; they learn that questions need not be phrased in a sophisticated fashion; they learn that it is all right to ask the same question several times. All questions are answered truthfully and in terms of current knowledge. Finally, parents are encouraged to write or call me in case any questions occur to them after they leave Duke Medical Center.

Dealing With Long-Term Concerns

At the initial visit to the cleft palate team, parents are not yet concerned about the state of the baby's teeth, nor are they particularly concerned about statements that the child may need orthodontic treatment at a later stage of development. Statements about the possible need for speech therapy may be somewhat more anxiety arousing. Here is the first meaningful indication that something, in addition to the cleft, might continue to be wrong with the child even after surgery. This discussion about possible future functional limitations may arouse anxiety. The anxiety may be short-lived because at this stage of the child's development, speech is not as important as it will be later on. After all, an infant has a limited vocal repertoire and parents expect to wait for speech to appear. It is important, however, that discussions of possible future limitations take place because it helps prepare parents for such an eventuality. More importantly, the expectation of a dysfunction allows parents to make preliminary preparations and thus cope more effectively with the dysfunction should it appear.

For some parents there are other immediate problems. Feeding may be a problem for some. We know the type of cleft the baby has influences

whether the baby can be breast- or bottle-fed or whether he has to be fed by special means. Experiences with feeding are explored and mothers are encouraged to contact us if they continue to experience problems. Another problem has to do with the possibility that infants with cleft palate will be affected by serous otitis media. Parents are encouraged to anticipate problems and it is strongly suggested they take the baby to the appropriate health professional in the local community promptly should a problem develop. In this case, as a psychologist, I am merely reinforcing what has been told to the parents by my cleft palate team colleagues.

From my point of view, the questions raised in various forms revolve about the desires of the parents to learn about the child's future status. They want to know whether their child will grow up to be normal. My approach is to review with them some of the research and clinical findings about children and adults with cleft lip-palate. I can point out that children with clefts compare favorably with normal children in terms of intellectual level. The academic performance of children with clefts is comparable to normal children. The occupational status of adults with repaired clefts varies normally and one can find these adults in the professions, business, farming, and in the labor force.

I can assure parents that children and adults with repaired clefts are not particularly noted for the development of emotional disturbances. In general, no particular personality disturbance or cluster of personality traits has been identified with cleft palate. Often, I conclude by stating that the best guess about the baby's future can be made by looking at the family. The motivations, ambitions, abilities, and value structure of the family probably will have the greatest influence on the child with cleft as on any child.

This rather lengthy counseling session with the parents is important because it brings the parents immediately into active participation in the treatment of the child. It enables them to feel they can and must make their contributions to the child's welfare. Most importantly, it establishes a communication pattern about the child. Since the focus is not only on the cleft, but on a variety of treatment approaches and a variety of the child's behaviors as well, adequate communication with parents assists in cleft palate management. It will become increasingly im-

portant, as the child grows older, for members of the cleft palate team to use the parents as a primary source of information about the child's progress. The parents will be used also as interpreters and, at times, the instrument of treatment of the child.

Conclusion

The psychologist has an active role in the treatment process when a baby and his parents first come to the cleft palate team. It is at this initial visit that a patient and his family are introduced to cleft palate treatment procedures. The plastic surgeon and the orthodontist are focusing their attention on the baby, and necessarily so. They have to evaluate the baby and establish treatment plans. The psychologist must focus his attention on the parents because they are a vital link in all efforts to treat the child. Parents must be helped to absorb and process information and make appropriate decisions about what is to be done for the child. In the early, formative years of development they are virtually the only communication pathway to the child. Finally, and certainly far from least in importance, the emotional state of the parent is a concern in cleft palate management.

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Dental Disease Prevention Week Kits

The N.C. Society of Preventive Dentistry is again declaring the week of October 29th - November 4th as Dental Disease Prevention Week. For anyone wishing to promote the alternatives to Trick-or-Treat candy on Halloween we will be glad to mail you a kit at *no charge*. Included in the kit:

- Radio "spots" about halloween candy
- Articles for Food Section of newspapers
- Alternatives to Trick-or-Treat Candy
- Package of "Grin Stickers"
- Mayor's Proclamation for D.D.P.W.

This is a great project for Dental Society Auxiliaries, Hygienists' or Assistants' groups to promote. For free kit write: John R. Dunn, D.D.S., 6300 E. Independence Blvd. Charlotte, N.C. 28212

A Monograph on Hematology Part II Disorders of White Blood Cells

John C. Angelillo, D.D.S., M.D., Edward A. Dolan, D.D.S.,
Calvin R. Peters, M.D. and Nicholas G. Georgiade, D.D.S., M.D.

INTRODUCTION

A normal, healthy 12 year old boy is examined by his family dentist because of recent gingival bleeding, pain and slight mobility of his permanent molars. The gingival tissues are also slightly swollen and mildly erythematous. These changes of the oral soft tissues may be secondary to local irritation, infection or possibly associated with an unusual periodontal disorder. They also may be signs of a serious underlying hematologic disorder.

During the course of acute leukemia, nearly all patients develop significant oral manifestations of their disease. In this country, acute leukemia accounts for almost 50 per cent of malignancies that occur in white children under 15 years of age. Of the wide variety of systemic diseases which produce oral manifestations, none does so with greater consistency than blood dyscrasias, specifically leukemia. While lymphadenopathy is the most frequent single finding suggestive of leukemia, mucosal ulceration, oral petechiae, ecchymosis and alveolar bone destruction causing displacement of teeth are not uncommon. Oral manifestations of systemic disease are especially important to dentists because a patient seeks dental care first for relief of symptoms.

A large number of leukemic children develop serious oral problems from complications of their disease or during aggressive chemotherapy. Significant advances in chemotherapy have increased the survival time of these unfortunate patients and dental treatment may be required over many years. Effective management and skillful dental care can provide much needed comfort to this group of patients.

MATURATION AND FUNCTION OF WHITE BLOOD CELLS

Granular Leukocytes

White cells originate from the same undifferentiated mesenchymal or stem cells as do red cells and platelets. The first white cell to evolve from the stem cell is the MYELOBLAST. It is a round cell with a round nucleus and nucleolus and finely stippled chromatin. After mitotic division and the accumulation of cytoplasmic granules, it becomes a PROMYELOCYTE. With the loss of the nucleolus and the appearance of heavy granules in the cytoplasm, the cell has matured into a MYELOCYTE. Depending on the staining characteristics of the granules, the cells can be either neutrophilic, eosinophilic or basophilic myelocytes.

The myelocytes continue to divide and develop by changing their round nuclei into a horseshoe shape. These METAMYELOCYTES evolve into their "juvenile" forms, then into "band" forms and finally with complete segmentation of the nucleus, mature to become the neutrophils (polys), eosinophils and basophils.

Agranular Leukocytes

LYMPHOCYTES are agranular leukocytes which arise from lymphoblasts in bone marrow and are also found in lymphoid tissue throughout the body, especially in the spleen, lymph glands, tonsils, adenoids and appendix. It has been shown that there is a continuous re-circulation of lymphocytes between lymph and peripheral blood and their life span varies greatly. Unlike the granular leukocytes, lymphocytes do not undergo a maturation cycle. The variation of the staining qualities of the cytoplasm is probably related to their functional capabilities.

Lymphocytes are the most undiffer-

entiated of all leukocytes. Their cytoplasm never changes. The nuclei do not become segmented and specific cytoplasmic granules do not develop.

Little is known of the MONOCYTE, the other non-granular leukocyte. Originally they were called "transitional cells" because they were thought to be in a transitional stage of development between lymphocytes and neutrophilic leukocytes. Although they constitute 3 to 8 per cent of the leukocytes in circulating blood, they are difficult to identify and cannot be differentiated from larger lymphocytes.

It is postulated that MONOCYTES evolve from MONOBLASTS in the bone marrow and are increased in certain acute and chronic bacterial and protozoal infections and in monocytic leukemias.

The function of leukocytes is to defend the body against invading agents; attack it, remove it and restore normal function. Unlike red blood cells, they do not have a definite life span and are probably not worn out by their intrinsic enzyme systems. They do not carry out functions in the circulating blood, but rather use the blood for travel from the site where they were formed to a site where they are needed to carry out their activities.

Chemical substances from foreign cellular material which are released in injured tissue attract certain leukocytes. This phenomenon is termed CHEMOTAXIS. Chemotaxis is observed chiefly in neutrophils and eosinophils. Because other foreign substances cause increased vascular permeability, leukocytes can easily migrate through vessel walls and enhance the chemotactic process. Drawn to the foreign and injurious agents, the neutrophils make contact with the invading particles and phagocytize them.

PHAGOCYTOSIS is the process of

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engulfing and ingesting foreign substances and particulate matter. The mechanism of ingestion depends on the physical properties of the bacterial surface and leukocytes. Organisms can be "trapped" against a suitable surface; then, aided by substances in tissue fluids such as opsonins, tropins and agglutinins, phagocytosis proceeds.

Most engulfed bacteria, foreign particles and cellular fragments are digested by cellular enzymes and destroyed. Some intracellular organisms may survive for long periods of time or even multiply. Histoplasma, tubercle bacilli and *M. Leprae* have considerable resistance to intracellular digestion. Phagocytosis is more efficient in the presence of antibodies which coat the bacterial surface and facilitate contact by the phagocyte.

Neutrophils are the important cells of most acute inflammatory processes and are the first leukocytes to appear. They disintegrate and release pyrogens which stimulate leukocytosis. They also release proteolytic substances which liquify injured cells. Providing the bone marrow is capable of producing leukocytes, these will progressively increase in numbers until the irritant is overcome.

Eosinophilic increase is characteristic of allergic inflammation and of certain parasitic infections especially worms or more properly, helminths. Normally more eosinophils are found in tissue fluids than in blood and they are also found in the lining of the bowel, in the skin and throughout the respiratory tract. Little is known of their function. They are found during the earliest phase of immune reactions and have been shown to phagocytize antigen-antibody complexes.

Basophils appear in large numbers during the healing phase of an acute inflammatory process and in chronic inflammation. Because their granules contain heparin, it is postulated that they function by delivering the anticoagulant which prevents the clotting of blood, facilitates lymphatic draining and enhances absorption of foreign matter.

After about three days, the monocytic cells predominate the inflammatory site. Although they are slower in chemotactic movement, they are extremely phagocytic. They contain nucleases, proteinases and carbohydrates, and unlike granulocytes, they contain lipases. They can ingest and destroy a wide variety of particulate matter as well as bacteria and thus

are considered the scavengers which clean-up and prepare for repair.

Although the lymphocyte is mobile, it is weakly chemotactic and not found during the early stages of inflammation. They are more numerous in subacute and chronic inflammation. There is no doubt that the lymphocyte is an important immunologic cell and its most important function may be to release antibodies into an inflammatory zone. It is thought that when the small lymphocyte makes contact with an appropriate antigen it divides and produces a cell capable of antibody formation.

While little is known of how the body is able to maintain the variety of leukocytes within a narrow range of values, it is possible to associate changes with specific diseases. Change in absolute numbers, involving increases or decreases in specific white cells, is an invaluable tool in the differential diagnosis of disease processes.

SIGNIFICANCE OF WHITE BLOOD CELL COUNT

Leukocytosis

Leukocytes in the circulating blood of the normal adult number between 5,000 and 10,000 per cu mm with an average of 7,000. A value above 10,000 is considered a leukocytosis.

In addition to a diurnal variation with leukocyte counts being higher in the afternoon, counts also differ with changes associated with physiologic and emotional factors. During infancy, white cell counts may be very irregular. During childhood there is less variation and adult values are reached in the teen years.

Leukocytosis in the 35,000 range can appear very quickly with heavy exercise. The rise is dependent on the vigorousness of the exercise and not on the duration. The count returns to normal in one hour.

A parenteral injection of epinephrine or paroxysmal tachycardia can evoke leukocytosis. Pain, fear and anxiety may precipitate a state of leukocytosis, the magnitude of which depends on the intensity of the emotion.

Leukocytosis occurs in infections due to many organisms including cocci, some bacilli such as *E. Coli*, *Ps. Aeruginosa*, *C. diphtheria*, certain fungi, *Spirochetes*, viruses and parasites.

Leukemoid Reaction

Leukemoid reaction refers to an unusual reaction which results in an ex-

tremely high white cell count, even as high as 200,000 per cu mm without additional clinical or laboratory evidence of leukemia. Although the magnitude of the leukocytosis is suggestive of leukemia, clinical findings of splenomegaly, lymphadenopathy and sternal tenderness are absent. Few if any immature leukocytes are found in the peripheral blood and other hematopoietic abnormalities cannot be identified. High levels of alkaline phosphatase have been observed in leukemoid reactions contrasted to the low values found in leukemia.

Leukemoid reactions have been observed in association with meningococcal meningitis, pneumonia, diphtheria, tuberculosis and infectious mononucleosis. The reaction has also been reported following severe burns, mercury poisoning and with diabetic acidosis. Intense stimulation of the bone marrow secondary to acute hemorrhage or rapid hemolysis of blood has also produced the leukemoid reaction. Certain malignancies, primarily those with bone metastases, multiple myeloma and Hodgkin's disease have all caused the reaction.

The etiology of the leukemoid reaction is not known and diagnosing this reaction from leukemia can be very difficult and is often not possible.

Leukopenia

Leukopenia is a reduction in the white cell count to less than 4,000 leukocytes per cu mm. Clinically it is as critical as an abnormally high count because patients are vulnerable to minor infections which can rapidly become overwhelming and frequently are fatal.

Usually the decrease is due to a reduction in granulocytes (granulocytopenia, neutropenia), rarely due to lymphopenia. Neutropenia can be secondary to a wide variety of bacterial, viral and protozoal infections. Most notably typhoid, brucellosis, influenza, measles, rubella, hepatitis and malaria. In septicemia and other overwhelming infections usually accompanied by leukocytosis, leukopenia is an unfavorable sign reflecting the magnitude of the infection.

Vast numbers of chemical agents and drugs have been shown to cause leukopenia; among these are antimetabolites, antibiotics and antihistamines. Pernicious anemia, aplastic anemia and chronic hypoplastic anemia are known to cause leukopenia. It also occurs in certain

nutritional deficiencies and debilitated states.

Differential White Cell Count

A "differential" white count refers to the percentage of each variety of leukocyte. Normal values are listed in Table 1. Usually 100 white cells are counted and identified. Abnormalities in the total number and proportion of leukocytes reflect the body's reaction to noxious agents and often help diagnose the nature of the noxious agent.

LEUKOCYTES

NORMAL VALUES

Granular Leukocytes	Per Cent
Neutrophils	
Juvenile	3-5
Segmented	54-62
Eosinophils	1-3
Basophils	0-1

Agranular Leukocytes

Lymphocytes	25-33
Monocytes	3-7

You can visualize the maturation process of granulocytes across a page with the immature, single lobed nucleus cells to the left and continuing with the mature five lobed nucleated cell on the right. The term "shift to the left" was introduced to describe an increase in the single lobed, younger forms while a "shift to the right" implies an increase in the older, mature forms.

Agranulocytosis

In 1922 Schultz recognized a syndrome of unknown etiology which he observed in middle aged women. It was characterized by sore throat, marked prostration and granulocytopenia, and rapidly progressed to sepsis and death. In 1931 Krache drew attention to the disorder and noted an increased incidence with the introduction of coal-tar derivatives for therapeutic use.

The disease begins with premonitory symptoms of malaise, weakness and prostration. Oral lesions appear early and constitute the significant clinical manifestations. Gangrenous ulcerations of the gingiva, palate, oral mucosa and pharynx cause severe pain. The ulcers are irregular craters covered by a grey-black membrane. Gingival bleeding and excessive salivation are also common. The white cell count is usually below 2,000 per cu mm with an almost complete absence of granulocytes hence, there is no associated inflammatory response. Red

blood cells and platelets are usually normal.

Among the drugs and compounds which are incriminated are amidopyrine, chloramphenicol, barbiturates, phenothiazines and phenacetin. The number of cases of agranulocytosis decreased following reports identifying injurious agents. As new drugs were introduced, new cases appeared.

If the agranulocytosis is due to a reversible drug reaction, improvement of the mucous membranes will occur in about three days. Topical anesthetic agents and analgesics are helpful in alleviating the painful oral lesions while antibiotics are useful in minimizing or preventing overwhelming secondary infection.

Cyclic Neutropenia

Cyclic neutropenia is a type of agranulocytosis characterized by recurrent, periodic diminution of neutrophils. Weeks or months of symptom-free intervals occur, only to have the neutropenia return again in a rhythmic pattern.

Signs and symptoms are similar and milder than those of agranulocytosis: unexplained fever, sore throat, stomatitis and lymphadenopathy are usual. Patients develop a severe gingivitis during the neutropenic phase, but mucosal ulceration usually does not occur.

LEUKEMIA

Leukemia is a neoplastic disease characterized by the overproduction of leukocytes or their precursors principally in the bone marrow, spleen and lymph nodes. Any one of the white blood cell types may proliferate in this disease and the types of leukemia correspond to the predominant, classified abnormal cell forms. Each has an acute and a chronic form.

Chronic Lymphocytic Leukemia

Chronic lymphocytic leukemia is three times as frequent in males as in females and usually occurs between the ages of 50 and 70. The onset is gradual and insidious. The first complaint may be painless lymphadenopathy in the neck or axilla. Less often, signs and symptoms of anemia or hemorrhagic manifestations may dominate the picture.

The total leukocyte count and peripheral blood smear is sufficient for diagnosis. The white blood cell count averages 200,000 per cu mm and 90 per cent or more of these cells are small

lymphocytes. The lymphocytes infiltrate bone marrow, crowd out other blood-forming elements and produce anemia and hemorrhagic manifestations. This disease may be quite benign for long periods of time but it is always progressive. Hypogammaglobulinemia may develop, and recurrent infections primarily of the staphylococcal variety are common. Patients ultimately die of infection; the average survival time is three years from the onset of symptoms.

Chronic Granulocytic Leukemia

This form of leukemia usually affects patients between the ages of 20 and 50 and is slightly more common in males than in females. This disease can progress undetected for years and may be well advanced before it is recognized.

The spleen becomes markedly enlarged usually causing left upper quadrant pain. An increased metabolic rate develops with progression of the disease and accounts for loss of weight, nervousness and weakness. Bleeding episodes secondary to reduction of platelets are common. Twenty per cent of this group of patients manifest abnormal bleeding often after simple tooth extraction or minor surgery.

Persistent leukocytosis shows counts ranging from 100,000 to 800,000 per cu mm with the predominant cell type being the mature granulocyte, although myeloblasts and promyelocytes may be seen.

The course of this disease may be protracted, and remissions, either spontaneous or induced by treatment, may occur. However, death usually ensues in four years from infection, progressive anemia or hemorrhage.

Oral manifestations of the chronic leukemias are less common than the systemic signs. Gingival enlargement is seen but is secondary to gingival irritation and not due to leukemic infiltrations. Bleeding may occur, but it is usually not severe. Mucosal pallor and petechiae, particularly on the soft palate, may be seen. Firm, non-tender cervical lymph node enlargement is common in chronic lymphocytic leukemia. On occasion, leukemic infiltrations may produce palatal swelling and salivary gland enlargement similar to that seen in Mikulicz's syndrome.

Acute Leukemia

The onset of the acute forms of leukemia is sudden and rather dramatic. Especially frequent under 5



Figure 1. Oral mucosal and lip ulcerations in a patient with acute myeloblastic leukemia.

years of age, the children are extremely ill from the beginning with fever, weakness and marked prostration. A wide variety of clinical pictures may be encountered depending on the systemic effects of the disease. Hemorrhagic diathesis from mucous membranes is common with ecchymosis and petechiae developing during the course of the disease. Enlargement of the spleen and liver is evident. Rheumatoid pains and sternal tenderness are present in the great majority of cases.

Depending on the predominant cell type, acute leukemia is classified into three forms: acute lymphoblastic, acute myeloblastic and acute monocytic leukemia.

Acute lymphoblastic leukemia is characterized by extremely enlarged nodes which are not found in the other forms of acute leukemia. Lymph node architecture is completely lost to the leukemic infiltrate.

Myeloblastic leukemia is characterized by the retention of normal lymph architecture; however, a leukemic infiltrate is present. Liver destruction is confined to the sinusoids, and greenish-gray tumors known as chloromas occur in the soft tissues particularly in the periosteum of the skull and other bones.

The monocytic form of acute leukemia is the most common of all the leukemias having oral manifestations. The gingiva is swollen by the leukemic infiltrate and the child often develops foul smelling ulcers of the mouth and pharynx.

The diagnosis of leukemia is not difficult in most cases. Routine CBC will invariably show abnormalities in one or all of the values. The anemia will not be uniform, the total white count will vary from 1,000 to over 100,000 per cu mm and platelets will be decreased. Regardless of the variation in peripheral blood pictures, the bone marrow always shows abnormal cells.

The oral features of acute leukemia often prompts a patient to seek dental consultation first. The oral mucosal changes associated with the disease include pallor, gingival hypertrophy,

bleeding and palatal petechiae. Due to the leukemic infiltrate, loosening of the teeth may result as the periodontium is invaded, and a widening of the periodontal ligament space can be seen radiographically. Xerostomia is common and the tongue may be heavily coated and the patient will have fetid breath. Figure 1. Soreness, pain, hemorrhage and swelling over the mandible seem to be the most common presenting symptoms in a majority of cases.

Children who are undergoing intensive chemotherapy usually develop mucosal ulcerations and herpetic-like lesions on the lips. Figure 2. The ulcerations may be quite deep and always very painful. Because of inadequate defensive mechanisms, fungal and bacterial invasion commonly compound the problem.

Multiple Myeloma

Multiple myeloma is a malignant neoplasm of bone marrow with multiple, small solid tumors forming in the red marrow of the skull, ribs, clavicles and extremities. These tumors are composed of "myeloma cells" which are thought to be abnormal plasma cells. They produce an excess of an unusual group of proteins which are responsible for the pathophysiologic changes of the disease. One abnormal protein, the Bence Jones protein has been observed in urine in 50 per cent of cases and is considered pathognomonic of multiple myeloma.

Anemia with hemorrhagic tenden-



Figure 2. Heavily coated and ulcerated tongue in a child receiving chemotherapy for acute lymphoblastic leukemia.



Figure 3. Multiple radiolucencies of the mandible in a patient with multiple myeloma.

cies is a common early finding or, thoracic and lumbar back pain from weakened vertebrae may result, progressing to pathologic fractures producing neurologic signs. Multiple circumscribed bony defects are seen as rounded, punched-out radiolucencies on radiographs. Abnormal proteins and the hyperproteinemia can produce nephritis and the so-called myeloma kidney.

Involvement of the jaws in patients with multiple myeloma has been reported numerous times. The classical punched-out radiolucencies are most

often seen in the angle and ramus of the mandible. Figure 3. Painful swelling with expansion of the mandible, gingival and lip paresthesia and mobility of teeth are not unusual.

Selective x-ray treatment and blood transfusions for anemia may slow the process and induce transient improvement, but the prognosis is unfavorable and death usually occurs within two or three years.

Infectious Mononucleosis

Infectious mononucleosis is an acute illness of the young with clinical

manifestations of fever, splenomegaly, cervical lymphadenopathy and sore throat. Approximately 80 per cent of the cases now occur in patients between the ages of 15 and 30. It is caused by a virus and is transmitted by kissing in most instances.

An absolute lymphocytosis of a peculiar type cell known as a Downey cell can be confused with acute leukemia. The white cell count may be high or low, but the Downey cell always predominates and accounts for 60-80 per cent of white cells. The serum also contains an increased concentration of heterophil antibodies (Paul-Bunnell test), increased titers of which bear no relation to the severity of the disease.

Palatal petechiae occur in approximately 20 per cent of patients and are considered pathognomonic. They appear as small, circumscribed red spots from 0.5 mm to 1 mm in diameter are usually found at the junction of the hard and soft palate and occur singly or in groups.

There is no specific treatment for this disease but with bed rest and adequate diet, spontaneous recovery takes place within four weeks.

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CAPITAL CITY SEMINAR FEATURES DIRECTOR OF PANKEY INSTITUTE

The 1978 Capital City Seminar, sponsored by the Raleigh-Wake County Dental Society, is scheduled for Friday, September 8, 1978, at the McKimmon Center for Continuing Education, corner of Western Blvd. and Gorman St., immediately across from the North Carolina State University Campus.

Featured guest for the Seminar will be Dr. Loren Miller, Director of the L. D. Pankey Institute, who will speak on "A Philosophy of Life and the Practice of Dentistry for the Developing Dilemma of the 1980's." Registration will begin at 8:00 a.m.

The nature of the dilemma which is developing in the profession can be described in the following statements and questions:

1. Is the private practice of den-

tistry, as we have known it in America, doomed?

2. What about the increased "Third Party" involvement?
3. What about all those emerging closed panels?
4. Is Sears-Roebuck really going into the delivery of dentistry?
5. What about National Health Insurance?
6. Will President Carter's attitude toward the profession affect dentistry — and me?
7. How about denturism?
8. The Hygienist movement — will they eventually have offices of their own?

In the face of all these changes, does The Philosophy of Dr. L. D. Pankey apply? If so, how?

The Seminar will be divided into three sections:

—An explanation of the various aspects of the total dilemma, and of the nature of the change in dental health care delivery in the next ten to twelve years.

—What will be your options, as an individual, and where will you find yourself most likely to survive?

—An explanation of The Philosophy of Dr. L. D. Pankey and an interpretation of its application to the above problems reflecting that herein lies more opportunity than ever before in the history of the dental profession for those who can "listen," "hear," "understand" and "apply."

For Further Information, Contact: Dr. James F. Fulp, Jr., 319 S. Academy St., Cary, N.C. 27511. Telephone (919) 467-7055

Effect on Caries Prevalence of Daily Toothbrushing At School by Children Living in a Non-Fluoridated Area

Richard F. Murphy, D.D.S., M.P.H.* and Donald A. Welk, D.D.S., M.S.D.**

Introduction

The literature concerning the effectiveness of toothbrushing in reducing dental caries in isolation from other dental care procedures contains mixed results. Fosdick¹ stated that brushing the teeth immediately after the ingestion of foods can materially reduce dental caries. Hewat, Rice, and Eastcott,² after a study of student dental nurses, stated that the immediate brushing of the teeth after meals is not necessarily an effective preventive measure against dental caries. Kerr and Kesel³ showed a trend which indicated a possible effectiveness of regular toothbrushing. Hein⁴ found that brushing one, two, or even three times a day had little effect on the prevalence of dental caries. Mansbridge⁵ stated that a reduced incidence of dental caries would follow a personal regime in which standards of oral hygiene are improved. Miller⁶ found higher DMF rates among persons with regular toothbrushing habits than among those who brushed irregularly. Smith and Striffler⁷ stated that the reported frequency of toothbrushing is not related to the prevalence of dental caries. Koch⁸ found that supervised weekly toothbrushing reduced the incidence of carious tooth surfaces among children with high caries activity. Although Ainamo⁹ observed a linear decrease in carious tooth surfaces among adult men with increased frequency of toothbrushing, neither Sutcliffe¹⁰ or Ripa¹¹ demonstrated a relationship between oral hygiene and dental caries among school children.

In view of this conflicting data, along with current debates about the relative effectiveness of toothbrushing, flossing, and the use of fluorides, this investigation was begun to determine the effect of daily toothbrushing upon

dental caries experience among children living in a rural area without access to optimally fluoridated water.

Methods

This investigation was conducted among the elementary school children in Love County, Oklahoma. A recent dental survey¹² had indicated that these children had a mean of 4.0 DMF and df teeth combined, although there are no significant amounts of fluoride present in the water supplies of the county.

At the beginning of the investigation in November, 1972, the dental caries prevalence of the children in Grades Four through Six in Love County was determined by the use of the DMFS Index. These and subsequent examinations were conducted by the authors, without the use of radiographs.

After the completion of the initial examinations, the daily toothbrushing was begun by the children in Grades One through Six whose parents consented to the procedure. Multi-tufted soft-bristled brushes, and containers for storing them, were provided for each child. Once each day, immediately following the lunch period, each classroom teacher led the children in the brushing technique which involved a wiggling back-and-forth motion of the brush over an area of three or four teeth at a time. The teachers led the class in brushing all of the occlusal surfaces first, beginning in the mandibular right quadrant and proceeding to the mandibular left, the maxillary left, and the maxillary right quadrants. At least five seconds, or counts, were allowed for each area brushed. After brushing the occlusal surfaces, the teachers led the children in brushing the lingual and the buccal-labial surfaces of the teeth by the method described above. After the brushing was completed, the teachers instructed the students to rinse their toothbrushes

with water and to store their toothbrushes in the toothbrush holders. The brushing took place on each of the days that schools were in session (approximately 180 days per year), beginning in the fall of 1972 and continuing through the spring of 1975. Instruction of the teachers and periodic supervision of the brushing in each classroom was provided by a public health nurse who visited each school at least once per week during the 1972-1975 time period. Supervision of the classroom brushing was not conducted in the last year of the study. (1976)

Follow-up examinations were conducted in April, 1974, and November, 1976. At those times, the children that were present at school in Grades Four through Six were examined. The data from the three examinations are presented to determine the effectiveness of the daily classroom brushing in reducing the prevalence of dental caries.

Results and Discussion

A comparison of Tables I, II, and III indicates that there were no consistent differences observed in the caries experience of the children examined before the brushing began and those examined two and four years after the brushing began. Table I confirms the earlier finding that the children examined at the beginning of the study had a lower level of caries activity than might be expected in a non-fluoridated area. When the data are analyzed by DMF component (decayed, missing, and filled surfaces), Tables II and III indicate that the children examined later had generally higher filled counts than the children examined earlier. This would indicate that they received a higher level of dental care as the brushing progressed. Whether this occurred as a result of an increase perception of dental needs and the value of dental health or as a result of referrals made by the public health nurse who visited the classrooms is difficult to say. However, it is probable that the

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dentists who provided the care diagnosed as carious and restored many tooth surfaces that the examiners did not score as carious using their less sensitive examination techniques.

In an effort to determine the effectiveness of the brushing on various tooth surfaces, the data were analyzed by pit-and-fissure and smooth surface caries experience (Tables IV-IX). These data indicate that, for smooth surfaces, the brushing may have been somewhat successful. The number of decayed surfaces generally decreased as the brushing progressed; and where the total DMF surface count increased, increase was made up primarily of filled teeth. Again, since the examiners in the study did not use radiographs, it is possible that the dentists who provided care for the children diagnosed as carious and restored many smooth tooth surfaces that the authors scored as normal. It should also be noted that dental floss was not used in this investigation. It is conceivable that more consistent reductions in smooth surface caries would be observed if dental floss was used in conjunction with the brushing. In regard to pit-and-fissure surfaces, the increases in DMF scores again occurred primarily among filled teeth. It would seem to be expected that toothbrushing should have less effect in preventing pit-and-fissure caries than smooth surface ones, since the bristles cannot penetrate into the pits and grooves.

A final consideration must be that the classroom brushing was not supervised by the public health nurse during the final year of the study, and she reported that the brushing ceased on a regular basis in the absence of the supervision. Although this could definitely have adversely affected the results of the study, it also demonstrates that a brushing program cannot be expected to show beneficial results without constant supervision on a permanent basis.

Summary

The objective of this investigation was to determine the effect of daily toothbrushing at school upon the caries experience of children residing in an area which is not served by fluoridated water supplies. No consistent differences in caries experience were found among the children examined before the brushing began and those who were examined two and four years after the brushing began. Possible factors affecting these observations include the low caries experience

TABLE I
MEAN NUMBER OF DECAYED, MISSING, AND FILLED
PERMANENT TOOTH SURFACES, BY AGE,
Love County, Oklahoma, November, 1972

Age	No. of Children	Mean DMF Surfaces			DMF
		Decayed	Missing	Filled	
9	62	1.48	0.00	0.77	2.26
10	60	3.35	0.67	2.17	6.18
11	55	4.02	0.73	2.13	6.87
12	29	4.17	0.52	0.69	5.38

TABLE II
MEAN NUMBER OF DECAYED, MISSING, AND FILLED
PERMANENT TOOTH SURFACES, BY AGE,
Love County, Oklahoma, April, 1974

Age	No. of Children	Mean DMF Surfaces			DMF
		Decayed	Missing	Filled	
9	50	1.72	0.20	0.90	2.82
10	68	2.15	0.44	1.25	3.84
11	60	3.17	0.42	1.60	5.18
12	68	3.46	0.88	2.65	6.99

TABLE III
MEAN NUMBER OF DECAYED, MISSING, AND FILLED
PERMANENT TOOTH SURFACES, BY AGE,
Love County, Oklahoma, November, 1976

Age	No. of Children	Mean DMF Surfaces			DMF
		Decayed	Missing	Filled	
9	44	1.75	0.00	1.57	3.32
10	44	2.48	0.23	2.07	4.77
11	37	2.95	1.35	2.16	6.46
12	42	3.93	0.60	3.10	7.62

TABLE IV
MEAN NUMBER OF DECAYED, MISSING, AND FILLED
SMOOTH PERMANENT TOOTH SURFACES, BY AGE,
Love County, Oklahoma, November, 1972

Age	No. of Children	Mean DMF Surfaces (Smooth)			DMF
		Decayed	Missing	Filled	
9	62	0.56	0.00	0.32	0.89
10	60	1.77	0.53	1.20	3.50
11	55	1.87	0.58	0.89	3.35
12	29	2.24	0.41	0.21	2.86

of the children at the beginning of the study, the increased amount of dental care received by the children as the study progressed, and the fact that supervision of the classroom brushing was not provided during the last year of the study.

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TABLE V
MEAN NUMBER OF DECAYED, MISSING, AND FILLED
SMOOTH PERMANENT TOOTH SURFACES, BY AGE,
Love County, Oklahoma, April, 1974

Age	No. of Children	Mean DMF Surfaces (Smooth)			DMF
		Decayed	Missing	Filled	
9	50	0.74	0.16	0.34	1.24
10	68	0.93	0.35	0.44	1.72
11	60	1.73	0.33	0.77	2.83
12	68	1.60	0.71	1.19	3.50

TABLE VI
MEAN NUMBER OF DECAYED, MISSING, AND FILLED
SMOOTH PERMANENT TOOTH SURFACES, BY AGE,
Love County, Oklahoma, November, 1976

Age	No. of Children	Mean DMF Surfaces			DMF
		Decayed	Missing	Filled	
9	44	0.66	0.00	0.57	1.23
10	44	1.11	0.18	0.84	2.14
11	37	1.35	1.08	0.86	3.30
12	42	1.81	0.48	1.38	3.67

TABLE VII
MEAN NUMBER OF DECAYED, MISSING, AND FILLED PERMANENT
TOOTH SURFACES, PIT AND FISSURE, BY AGE,
Love County, Oklahoma, November, 1972

Age	No. of Children	Mean DMF Surfaces (Pit and Fissure)			DMF
		Decayed	Missing	Filled	
9	62	0.92	0.00	0.45	1.37
10	60	1.58	0.13	0.97	2.68
11	55	2.15	0.15	1.24	3.53
12	29	1.93	0.10	0.48	2.52

TABLE VIII
MEAN NUMBER OF DECAYED, MISSING, AND FILLED PERMANENT
TOOTH SURFACES, PIT AND FISSURE, BY AGE,
Love County, Oklahoma, April, 1974

Age	No. of Children	Mean DMF Surfaces (Pit and Fissure)			DMF
		Decayed	Missing	Filled	
9	50	0.98	0.04	0.56	1.58
10	68	1.22	0.09	0.81	2.12
11	60	1.43	0.08	0.83	2.35
12	68	1.85	0.18	1.46	3.49

TABLE IX
MEAN NUMBER OF DECAYED, MISSING, AND FILLED PERMANENT
TOOTH SURFACES, PIT AND FISSURE, BY AGE,
Love County, Oklahoma, November 1976

Age	No. of Children	Mean DMF Surfaces (Pit and Fissure)			DMF
		Decayed	Missing	Filled	
9	44	1.09	0.00	1.00	2.09
10	44	1.36	0.05	1.23	2.64
11	37	1.59	0.27	1.30	3.16
12	42	2.12	0.12	1.71	3.95

1978 Scrap Amalgam Drive Nov. 13-17

The North Carolina Dental Auxiliary will hold the 1978 Scrap Amalgam Drive November 13-17. Auxiliary members will be collecting donations of scrap amalgam, scrap gold, used mercury and cash. The value of all contributions is tax deductible. The proceeds of the drive will be administered by the Dental Foundation of N.C., Inc.

The 1977 drive generated over \$9,000 for the support of the dental profession in N.C. Last year two grants, one to the Nature Science Park in Winston-Salem and one to The Health Adventure in Asheville, were made for educational dental exhibits in the amount of \$5,000 each. A grant of \$27,000 was also made for a Health Manpower Information Service to be established in Chapel Hill. This is being done as a joint venture with the N.C. Dental Society.

Auxiliary members are pleased to give their time and effort for this purpose, but the participation of the many dentists and their auxiliary personnel has been and will be the primary cause for successful drives. The Auxiliary thanks you for your past support and hopes that you will again help us in 1978.

The State Chairman for 1978 is Mrs. Jim Harrell, Jr.

* * *

CRANDELL BEGINS RESEARCH IN NETHERLANDS. Dr. Clifton E. Crandell, professor of oral diagnosis, has been granted a Kenan leave of absence for one year beginning in July.

Crandell will spend the year at the University of Nijmegen, Netherlands, studying systems of gathering and recording dental information. He will study the records that dentists keep on their patients, the errors inherent in manually recording dental information, and various coding schemes that individual dentists develop.

Crandell already has examined dental record keeping in the United States in studies similar to those he will conduct at Nijmegen. He plans to write about his findings in a book, "Information Needs in Dentistry."

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Second in a series of articles from the Dental Research Center, UNC-Chapel Hill.

Biomaterials Clinical Research Anterior and Posterior Composites

Karl F. Leinfelder, D.D.S., M.S.

Troy B. Sluder, D.D.S., M.S.

The first dental composite resin (Addent) was manufactured by the 3M Company of St. Paul, Minnesota, nearly a decade and a half ago. This new and innovative type of restorative material was based on a formulation developed by Ray Bowen of the National Bureau of Standards. Although originally beset with a number of problems such as poor color stability and an unpredictable setting time, this material was eventually improved to the point where it has all but replaced silicate cement and acrylic resin. During the course of its historical development a number of manufacturers (including Johnson and Johnson and the 3M Company) strongly recommended the composite resin as a substitute for amalgam restorations. These recommendations were based on a number of improved physical properties including a low coefficient of thermal expansion, high compressive strength and relatively good resistance to mechanical abrasion.

As a direct result of manufacturers' claims many clinicians began using composite resins in Class I and Class II cavity preparations as well as in anterior teeth. Encouraged by what generally appeared to be good clinical performance after periods of six months to one year the practice of restoring occlusal surfaces with composite resins grew at an accelerating pace. During the early to mid seventies, however, a number of well controlled clinical studies¹⁻⁵ demonstrated that composite resins should not routinely be used in posterior teeth particularly those subjected to high stress concentrations. It was shown that although some of the properties of composite resins equaled or exceeded those of amalgam their clinical performance was inferior to the amalgam restoration. First of all, it was shown

that the surface of the composite resin restoration undergoes a generalized loss of material when used as a Class I and Class II restorative material. The pattern of wear is analogous to the reduction of the water level in a leaky container. By contrast the amalgam restoration under the same clinical conditions undergoes a localized type of wear, producing facets or areas of depressions or concavities. Furthermore, it was pointed out that the proximal contacts of Class II composite resin restorations sometimes have a tendency to lose their convexity over a period of time. The loss of material at the interproximal area possibly can be attributed to normal physiologic movement of the teeth during mastication. During movement the contact of one tooth may rub against the surface of the other producing a flattened surface. Frequently, the loss of material was accompanied by a mesial migration of the posterior teeth.

An evaluation of over 400 restorations inserted in anterior and posterior teeth five years ago at the Dental Research Center was recently completed. The restorative materials included were Adaptic,*Blendant** (predecessor of Simulate) Concise,† DFR, †† Sevriton† and Velvalloy,†† Sevriton, an unfilled poly (methyl methacrylate) resin served as a control for the anterior composite resins whereas Velvalloy acted as the control for the composites in posterior teeth.

Using the criteria developed by Cvar and Ryge⁶ each composite resin was evaluated for the following characteristics: color matching ability, secondary caries, interfacial stain, margin-

nal integrity and wear or loss of substance. In addition, selected samples were replicated for evaluation with SEM (scanning electron microscopy) using techniques developed in the Biomaterials Laboratory at the Dental Research Center.⁷ From the results of the evaluation it was demonstrated that after five years of service over 90% of all Class III and V composite resin restorations were rated as clinically acceptable. A strong correlation existed between the size of the restoration and clinical performance. In general, the more conservative the restoration, the better the clinical rating. Small conservative restorations, regardless of the composite resin used, were generally rated as clinically ideal. As a rule, the clinical performance of composite resins on the lingual and facial aspects of posterior teeth was at least as good as those in Class III cavity preparations. It should be mentioned at this point that contrary to what one would expect, composite resins were exceedingly well tolerated by the gingival tissue in spite of their naturally rough surface. Many of the composite resins evaluated had gingival margins well below the gingival crest.

Less than 25 percent of all Class I and Class II composite resin restorations were considered to be clinically acceptable. The major cause of failure was attributed to a generalized loss of material. In many instances three quarters of a millimeter (750 microns) or more of the surface had been lost through normal mastication. A typical pattern of wear is shown in figure 1. Illustrated is a SEM replica of a premolar restored with a composite resin. The tooth was restored approximately three years ago and was in normal function. As can be seen from this proximo-occlusal view the loss of re-

*Adaptic, Johnson and Johnson, Co., New Brunswick, N.J.

**Blendant, Kerr Mfg. Co., Romulus, Mich.

†Concise, 3M Co., St. Paul, Minn.

††DFR, Warner-Lambert, Lactona Dr., Richmond, Va.

††Sevriton, Amalgamated Dental Trade Distribution, Ltd., London, England.

††Velvalloy, S. S. White, Co., Dental Products Div. of Penwalt Corp., Philadelphia, Pa.



Figure 1. Scanning electron micrograph of a premolar restored with a composite resin. Note general wear of restoration as evidenced by exposed walls of original cavity preparation. Original magnification 12X.

storative material is generally uniform over the entire occlusal surface. The extent of material loss is made apparent by the degree to which the walls of the original cavity preparation are now exposed. The amount of composite resin loss appears to depend upon the extent to which the occlusal surface was restored as well as degree of stress concentration during mastication. Figure 2 is a scanning electron micrograph of a molar restored with a composite resin approximately three years ago. This photograph which is a higher

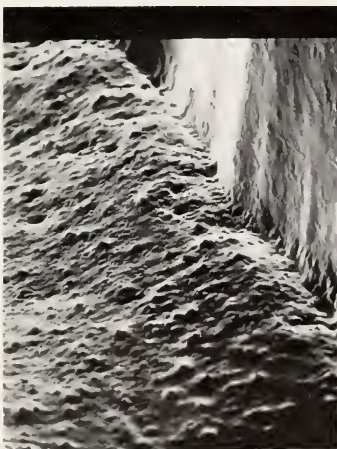


Figure 2. Scanning electron micrograph of a molar restored with a composite after three years of service. Note that while there has been a substantial loss of material the marginal adaptation is excellent. Original magnification 50X.

magnification than the illustration in figure 1 demonstrates the extent to which composite resins on occlusal surfaces can wear away. One of the exposed walls of the original cavity preparation can be seen as well as the rough surface of the composite. The distance from the cavo-surface angle of the cavity preparation to the occlusal surface of the composite in this case is approximately one millimeter.

Another of the problems possibly created by restoring the occlusal surface of posterior teeth is illustrated in figure 3. Shown is a SEM replica of the restored occlusal surface of a mandibular molar after less than four years of service. Note the attrition of the cavo surface angle near the center of the photograph. This type of defect is brought about by the supereruption of an opposing molar as the composite resin restoration wears away. In this case the lingual cusp of the opposing maxillary molar originally made contact with the restored central pit when the composite resin was initially inserted. As the composite resin wore away the lingual cusp supererupted to maintain occlusion. Eventually, after sufficient composite resin had been lost, the facial aspect of the lingual cusp occluded with the cavo-surface angle causing this localized attrition.

ADDITION CLINICAL OBSERVATIONS

Color Matching Ability

Little difference in color matching ability could be detected among the four composite resins evaluated. Of all the resin restorations, however, Sevriton exhibited the best color matching ability. This finding can probably be attributed to at least two factors. First of all, the rough surface produced by filler particles projecting from the composite resin has a strong affinity for coffee, tea or tobacco stain. The surface of a typical composite resin (Adaptic) after a period of service is illustrated in figure 4. By comparison the surface of Sevriton is smooth and almost featureless, regardless of the period of service. Secondly, inferior color matching ability may be attributed to porosity. The amount of internal porosity in composite resins is substantially greater than that normally found in unfilled acrylic resins such as Sevriton. When these subsurface porosities become exposed through normal attrition they trap and retain food stains giving the restoration a darkened appearance.

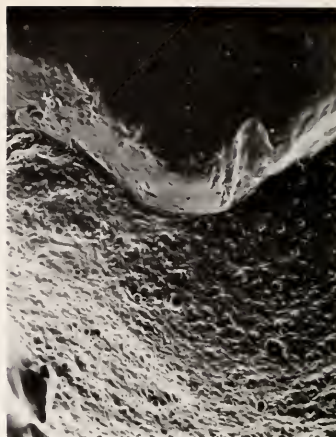


Figure 3. Scanning electron micrograph of the occlusal surface of a mandibular molar restored with a composite resin. Note the eroded cavo surface angle resulting from super-eruption of opposing lingual cusp. Original magnification 25X.

Marginal Integrity

While the abrasion resistance of amalgam is substantially better than composite resins in an oral environment the same relationship is not true for marginal integrity. The marginal failure or "ditching" commonly associated with amalgam restorations does not occur with composite resins. Instead, the occlusal surface of the composite resin directly contacts the prepared tooth structure at either a 90 degree angle or one that resembles a

(Continued on page 41)

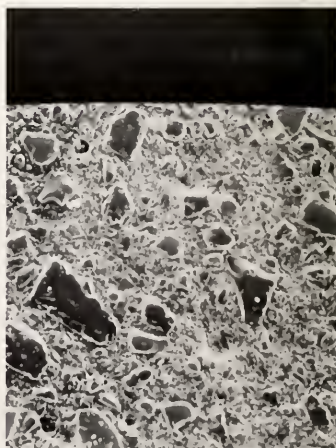


Figure 4. Scanning electron micrograph of the surface of a composite after a period of service. Note the filler particles projecting from the surface. Original magnification 250X.

Minimizing Problems in Making a Complete Lower Impression

Charles W. Ellinger, D.D.S., M.S.C., Lexington, Ky.

Dr. Charles W. Ellinger, University of Kentucky, conducted a scientific session entitled "Minimizing Problems in Removable Prosthodontics" at the 122nd NCDS Annual Session, Tuesday, May 16, 1978. The following article, reprinted from the Journal of Prosthetic Dentistry, is based on a portion of Dr. Ellinger's presentation. — EDITOR

The success of complete denture treatment is determined by correct clinical procedures for each given step; the making of an impression is one of these important steps. Since it is one of the first steps, the success of any succeeding step depends on it.

Objectives of an Impression

The objectives of an impression are: (1) retention, (2) stability, (3) support, (4) esthetics (appearance), and (5) preservation of the residual ridge. Retention is the resistance of vertical forces away from the residual ridge, and is directly proportional to the area covered. Stability is the resistance of the denture base to forces in a lateral position. It is possible to have one without the other. If a patient presents a large residual ridge consisting of flabby movable tissue with little supporting bone, the denture will have adequate retention but not stability. Conversely, if the patient presents a very small, badly resorbed residual ridge with a dense, tightly attached mucosa, the denture may have good stability but not retention. A combination of both is ideal.

Support depends on covering the adequate space available in the patient's mouth. The greater the area covered, the better the support. The more area covered, the less force there will be per unit area. The esthetics of

complete dentures begins with impression making. It is necessary to properly evaluate the desired support of the patient's face and incorporate this into the impression. The tissues must not be altered or stretched during the impression making.

Preservation of the residual ridge is necessary. The dentist should incorporate procedures that will aid in preserving the patient's valuable supporting structures.

Available Space

Observe the patient's mouth to determine the space available. Cover all areas that are available within the health and function of the tissues. Consider the available space in both a relaxed and a functional position.

The Tray

An important part of any impression is the tray. An inaccurate tray will incorporate errors that cannot be eliminated in any succeeding step. The tray should simulate the finished denture in shape and size. It should be able to carry the impression material to the mouth and to control and confine the material to enable it to accurately record minute details of the denture-bearing area. The prime goal in impression making should be an impression tray that will meet these objectives.

Primary and Secondary Stress

The selective-pressure impression procedure is based on the philosophy that certain areas are better able to withstand stress than others. Therefore, an attempt is made to make an impression that will place more stress on selected areas and less stress on others. The selected-pressure technique provides an impression that is both technically and biologically sound.

The primary stress of a lower impression will be placed on the buccal

shelf region providing the ridge is moderately or badly resorbed. If there is no apparent resorption of the residual ridge and the ridge has a dense fibrous muscle covering, the primary stress may be placed on the crest of the ridge. This distribution of stress is accomplished by alterations in the impression tray. If primary stress is desired on the buccal shelf, the impression tray is not relieved in this area. If secondary stress is desired on the crest of the ridge, holes are placed over the crest of the ridge of the impression tray to allow the impression material to escape. Primary stress is usually placed on the buccal shelf because most of the residual ridges will be moderately or badly resorbed. The buccal shelf will provide a good stress area because it has cortical bone underlying the soft tissue. Conversely, the crest of the ridge will usually show an irregular cancellous bony foundation.

Border Extension

The borders of the impression should end in soft movable tissue to provide a seal for the final denture. The labial, buccal, and lingual vestibules should be completely filled but not overfilled. The retromolar pad should be covered to allow the lower impression to end in soft movable tissue throughout the entire border area.

Clinical Procedures

Preliminary Impressions

The preliminary impression may be made in any type of material. (1) Use a preliminary alginate impression, make a personalized acrylic resin tray with the proper relief, border mold this acrylic resin tray, and make a final impression; or (2) make a preliminary compound impression and totally border mold the compound impression to simulate the shape and final form of the denture. Use this compound impression with proper relief for the final impression tray, or pour a stone cast in

the compound impression. Relieve the cast, make a personalized acrylic resin tray, and make a final impression in it. The method described herein is the use of modeling compound and the fabrication of a preliminary compound tray. All histologic and anatomic considerations need to be noted in respect to the area they influence, whatever method is employed.

Initial Impression

Select an edentulous metal tray that will allow for slight overextension in all areas, including the postmylohyoid fossae. Heat modeling compound and place it in the tray, extending it over the borders to prevent the material from falling out during placement. Place the material in the mouth with moderate pressure. Remove the initial impression from the mouth and place it in ice water. Mark the compound tray according to observations made in the mouth, and review available areas in the mouth at this time. Knife-trim the tray to the specific markings, which will reduce the amount of clinical time required for the completion of the border-molding procedure. Remove the metal tray after trimming excess modeling compound. Place a handle over the crest of the ridge to add support to the compound impression tray; this handle should not alter the normal support of the patient's face. Knife-trimming not accomplished prior to removal from the metal tray is done at this time. When complete, the compound impression tray should have the basic outline form of the finished denture.

Border-molding Procedures

Heat the inside surface of the compound tray with an alcohol torch, temper the tray in a water bath, and place it in the mouth to readapt the tissue side to the minute detail of the soft tissue. The initial impression will usually be slightly overextended and no additional material will need to be added. Perform border-molding procedures in the manner described. The labial vestibule is a critical area in the border-molding procedure. It not only affects the retention of the denture but also alters the appearance of the patient. There is a thick submucosa underlying the mucosa in this area, allowing the labial vestibule to be easily altered. Observe the space available in this area by lightly retracting the lip. Pulling the lip outward and downward may give a false picture of the space available.

Heat the labial border of the compound tray with an alcohol torch, temper it in water, and place it in the mouth. Lightly lift the lip out, up, and in. Remove the tray from the mouth, place it in ice water, and remove excess material.

If a prominent labial frenum is present, it will be necessary to heat this area separately. Again, lift the lip up and in. It is not necessary to move the labial frenum from side to side because there are no underlying muscles. The movement of the frenum is straight up and down. After the labial border has been border molded, replace the compound tray in the mouth. If the patient's appearance is not correct, border mold this area again until the appearance is satisfactory.

Buccal frenum area. The buccal frenum is influenced by the depressor anguli oris, buccinator, and orbicularis oris, which cause the buccal flange to move in both an up-and-down and a lateral movement. Therefore, in border molding this area, move the tissues out, up, in, and from side to side. The buccal notch on the tray will be wider than the labial notch but not as thick as the borders on either side of the notch.

Heat the modeling compound in the buccal notch region of the tray, temper the tray and place it in the mouth. Lift the corners of the mouth out, up, in, and from side to side. Remove the tray from the mouth and discard excess modeling compound.

Buccal shelf area. The buccal shelf in most edentulous mouths will provide an excellent area in which to place the buccal flange. More area is available if the ridge has been moderately or badly resorbed. The buccal flange of the compound tray should not extend past the external oblique line.

Heat the compound impression tray in the buccal flange region, temper it and place it in the mouth. Lightly lift the cheek out, up, and in. Remove the tray and discard excess material. Then replace the tray in the mouth and feel the buccal flange area to make sure that it is not overextended or underextended. Overextension will alter the esthetics; underextension will reduce the amount of retention and support. The buccinator muscle underlies the mucosa in the buccal shelf region. The fibers of the buccinator muscle run horizontally, enabling the flange of the denture to rest upon these structures without being displaced.

Lingual anterior area. The lingual anterior region is a critical area for retention and one most often abused.

The lingual anterior region has three anatomic structures that must be taken into consideration — the frenum, the submandibular caruncles, and the submandibular fold; these areas determine the width of the lingual anterior flange. The frenum cannot be constricted during the normal tongue movements because the denture will be lifted. If the other two structures are covered, the patient's salivary flow will be altered. Look in the patient's mouth and observe the space available with the tongue relaxed. There is an area on either side of the frenum that is easily displaced and will not be greatly altered when the patient licks his upper lip. In this region, extend the lingual anterior flange.

Heat the lingual notch on the compound tray, temper it, and place it in the mouth. Instruct the patient to lick the upper lip. Remove the tray from the mouth and discard excess modeling compound. Heat the compound tray in the anterior region on either side of the frenum, temper it, and place it in the mouth. Instruct the patient to lift the tongue upward and, at the same time, place two fingers over the tongue and apply downward pressure. This procedure will fill but not overfill the lingual anterior region. Remove any excess material. Lightly heat the same area, temper it, and place it in the mouth. Instruct the patient to lightly place the tongue cheek-to-cheek (overmanipulation of the tongue will cause loss of retention).

Pre- to postmylohyoid area. The next area to be border molded is the area influenced by the mylohyoid muscle in the molar region. The mylohyoid muscle influences the denture base during function. The contracted mylohyoid muscle will form approximately a 45° angle from the mylohyoid ridge to the floor of the mouth, so slope the compound tray in approximately the same angle. Knife-trim the compound tray in this region to establish the desired angle. Heat the tissue side of the mylohyoid region, temper it and place it in the mouth. Instruct the patient to place the tongue cheek-to-cheek several times. Heat the border of the flange in the mylohyoid region, temper it and place it in the mouth. Instruct the patient to place the tongue cheek-to-cheek. It will now be possible to view the impression and to see an "S" curve. Anterior to the mylohyoid region is the premylohyoid eminence. This eminence indicates the anterior extent of

(Continued on page 52)

Making Better Fixed Prosthodontic Impressions

Gordon J. Christensen, DDS, MSD, PhD

Dr. Gordon Christensen, Co-Director of Clinical Research Associates, Provo, Utah, conducted a scientific session entitled "Restorative Dentistry, 1978," at the 122nd NCDS Annual Session, Monday, May 15, 1978. The following article, reprinted with permission of the Chicago Dental Society, is based on a portion of Dr. Christensen's presentation. — EDITOR

Over 20 years ago various forms of "rubber like" impression materials were introduced to dentistry. At that time, reversible hydrocolloid was the choice of most dentists for making impressions for inlays, crowns, or fixed prosthodontic treatment. The new "rubber" materials were accepted cautiously. The majority of dentists nevertheless currently use one or more of the following categories of impression materials: polysulfide, silicone or polyether.

It is the purpose of this article to compare polysulfide, silicone and polyether materials, to report on a brief clinical study of the three types, to discuss the new polysiloxane materials, and to suggest methods to make easier and more accurate impressions. This article does not include reversible hydrocolloid, but this exclusion does not necessarily infer any superiority for the materials included over hydrocolloid.

Comparison of Material Types

Polysulfides. These materials are widely accepted by the profession and have many strong advocates. Included among polysulfides are such brands as Coe Flex, Formtex, Imprex, Kerr Permlastic, Miradent 70, Neo-Plex, Omniflex, ProFlex, Sta-Tic "X" and Super Rubber. The materials are usually supplied in two tubes of paste that are mixed together in equal lengths.

The advantages of these materials are: 1. Polysulfides are available in several viscosities for various uses. 2.

Their accuracy is good to excellent. 3. Impressions are relatively stable over a brief period of time. 4. They have been used for many years, and there is extensive knowledge about them. 5. They are generally less expensive than silicones or polyethers.

The disadvantages of polysulfides are: 1. The odor of some brands is objectionable. 2. These materials stain most clothing severely and the stains are nearly impossible to remove. 3. The materials in this category set slower than those in the silicone or polyether category. However, slow set may be an advantage in certain techniques such as making an impression of pin holes.

Silicones. These materials have been available for many years, and they are gaining popularity because of new putty forms that were introduced a few years ago. Included among silicones are brands such as Citricon, Elasticon, Flexicon, Jelcone, Kerr Traycone, SIR, Stalite Silicone Elastic Impression Material and Xantopren. Silicone materials are usually supplied with a liquid catalyst to be blended with tubes of paste or jars of putty.

The advantages of silicone materials are: 1. Most brands do not have an objectionable odor. 2. Most brands do not have objectionable staining properties. 3. The accuracy of these materials is good to excellent.

The disadvantages are: 1. Shelf life is often poor, and some brands show separation of oils in the tubes upon storage for several months. 2. Some of these materials may shrink to a clinically significant degree, if they are not poured soon after the impression is made. 3. Generally, silicones cost more than polysulfides but less than polyethers or polysiloxanes.

Polysiloxanes. This variation of silicones that is popular in Europe, but which is only now gaining use in the U.S., appears to have some advantages over other silicones. These polysiloxane materials vulcanize by an addition reaction, rather than by the usual condensation reaction. Such

chemical reaction has produced a significant improvement in the stability of accuracy of these materials. Brand names which are emerging are President by Coltene and Perma Gum by ESPE.

At this early stage, the advantages appear to be: 1. Shelf life is improved over regular silicones. 2. The materials are packaged in two paste systems rather than with a liquid catalyst. 3. The accuracy is excellent. 4. The stability of this accuracy over a period of hours or even days appears to be excellent. 5. The materials do not stain clothing. 6. The materials do not have an objectionable odor. 7. The viscosity is less than that of polyethers.

The disadvantages of the materials are: 1. The polysiloxanes are expensive. 2. The materials have not been used for long, and clinical and research data is still accumulating.

Currently, both brands listed above are being evaluated and the investigators are quite optimistic.

Polyethers. These materials were introduced only a few years ago. There are two brands currently available on the U.S. market — Impregum and Polygel. These products are supplied in two tubes of paste to be added together in equal lengths. A paste can be obtained to make the material less viscous and to slow the setting time.

The advantages of polyether materials are: 1. Their accuracy is excellent. 2. The stability of this accuracy over time is excellent. 3. Staining of clothing is not a problem. 4. The smell of the materials is not objectionable.

The disadvantages are: 1. These are very expensive impression materials. 2. They are the most viscous of the types discussed on placement in the mouth. 3. The set material is often difficult to remove from the mouth because of its rigidity. 4. The setting time is fast.

The apparent manipulation disadvantages can usually be overcome after using the materials for a short period of time.

Accuracy and Longevity of Accuracy

Many investigations have been conducted on the accuracy of polysulfide, silicone and polyether impression materials. Most of the investigations have shown that all categories of impression material have acceptable accuracy if used according to the manufacturers' instructions. However, many dentists and/or laboratories allow impressions to remain unpoured for hours or days. In these situations, the accuracy of various types of materials varies considerably.

The Denver Academy of Restorative Dentistry — a group of practicing dentists with whom the author has worked for 10 years — recently conducted the following simple clinical study on impression accuracy and stability.

Each of 15 study club members prepared two human extracted teeth, mounted side by side, with an MOD intracoronal inlay and a full crown. Three custom acrylic resin trays were made by each of the 15 members to fit the prepared teeth and adjacent stone material. Impressions were made in six brands of impression material, two brands from each material category — polysulfide, silicone, polyether. The impressions were poured in densite (Velmix) at three times: immediately after making the impression, three hours later, and four days later. Wax patterns were made on the Velmix dies and analyzed on the extracted tooth preparations with normal vision and under an American Optical Stereozoom Microscope up to 45 power.

Margins were judged to be good, clinically acceptable, or poor. All wax patterns made on dies that were poured immediately fit to the levels good or acceptable. Wax patterns made from dies poured three hours after the impressions were made had the following characteristics: polysulfide — all good or acceptable; silicone — good to poor — some wax patterns made for crown preps were too small; and polyether — all good. Wax patterns made on dies poured four days after the impressions were made had the following characteristics: polysulfide — all good or acceptable — some of the full crowns were too large; silicone — acceptable to poor — some crown wax patterns were too tight; and polyether — all good.

The clinical accuracy of most of the materials was good. However, the polysulfide materials had better stability than the silicones, and the poly-

ether materials had the best stability. If a dentist has clinical situations that demand longevity of accuracy, this study indicates that polyether materials are the products of choice.

Polysiloxane materials were not used in the described study but other research has supported their stability of accuracy.

Clinical Characteristics and Techniques

For many years clinicians have placed margins for crowns or fixed prostheses beneath the gingiva. This was thought to be necessary because of many dogmas of the past about "caries resistance." The result of such techniques was chronically irritated gingival tissue and margins that were difficult to observe or to finish. In the past decade, the preponderance of opinion and research in the field has supported the placement of crown or fixed prostheses margins in a supragingival location. It is the author's opinion that margins should be placed subgingival only when one or more of the following situations is present: 1. subgingival location is required for esthetics; 2. crown length is insufficient for optimum retention without placing margins subgingivally; 3. carious lesions are subgingival; 4. old restorations are subgingival; 5. root sensitivity requires subgingival location; or 6. rampant caries demands total coverage of all tooth structure exposed above the epithelial attachments of the teeth.

If one or more of the six previously described situations exists, margins should be placed subgingivally without severely or permanently damaging the epithelial attachment or surrounding gingiva. The following procedure will describe a bloodless, atraumatic technique.

Tissue Management. The gingival margins of tooth preparations must be *dry and visible* before impression material is injected into the gingival crevice. Although many techniques have been presented and described in the literature, *lack of total marginal detail in impressions remains as one of the most common errors in fixed prosthodontic procedures.* The following procedure is suggested to decrease the occurrence of this problem:

1. Using a water spray, tooth preparations are cut to the height of the free gingiva with a diamond instrument. The gingiva is *not* cut with the diamonds (Figure 1).

2. Appropriate cord is packed into the gingival crevice. Such cord should occupy about one-half of the distance

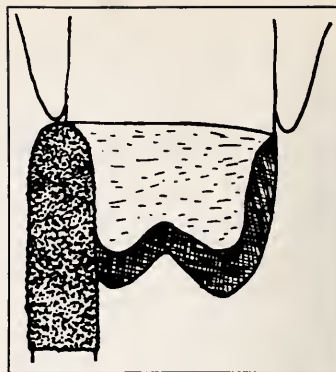


Figure 1. Preliminary tooth preparation is completed under water spray with a bullet-shaped diamond of an appropriate size. The gingiva is not touched with the diamond. The cross-hatched area indicates the removed tooth structure.

from the epithelial attachment to the original height of the free gingiva (Figure 2).

3. Without water spray, the gingival margins of the preparation are moved apically with a bur (examples #1171, 56). These margins are cut to the level of the cord. The gingiva should not be traumatized, and bleeding should not be present at this time. Care must be exercised to refrain from entangling the cord with the bur, which happens occasionally.

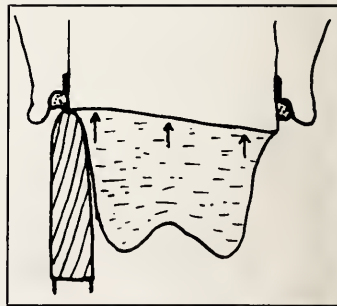


Figure 2. A cord is packed to the epithelium attachment. This cord forces the free gingiva apically and widens the gingival crevice. This allows the preparation to be finished with a bur, in a dry field, without touching the gingiva.

4. A second, smaller cord is placed with light pressure on top of the first cord to assure that the first cord is packed slightly apical to the gingival margin of the preparation (Figure 3).

5. After one or two minutes, the second, smaller cord is removed, leaving the original, larger cord in place (Figure 4). Bleeding is not present, and the gingival margins of the preparations are clearly *dry and visible* to the den-

tist. In this technic, the gingival margins of the preparations are directly related to the position of the epithelial attachment, rather than to the dentist's mental picture of where they *should be*. The epithelial attachment has not been cut away as it is in many other technics.

Electrosurgery as a tissue management procedure is used widely. It certainly allows easier and better impressions to be made. Although the author finds electrosurgery indispensable for certain fix prosthodontic procedures, it demands a healing response and is less predictable than the previously described technic.

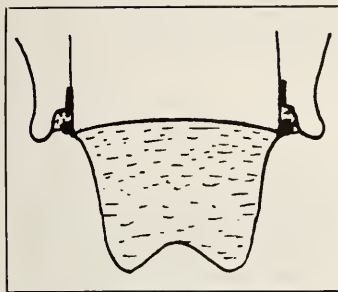


Figure 3. A small, second cord assures that the first cord is firmly packed to the epithelial attachment (second cord shown in black on drawing).

Impression Procedures: If gingival margins of crowns or fixed prostheses are either supragingival or exposed with cords in the manner described, impression technics are not difficult. All of the rubber-like materials should be injected around the preparation carefully with a syringe. A stream of air should be expressed immediately from the air syringe onto the impression material resting on the teeth. The result is a thin film of impression material on the tooth preparations. The film is bubble-free and does not contain saliva or debris. More viscous materials, such as polyethers, require a stronger air stream on the teeth immediately after expression of the impression material from the syringe.

A custom tray is the author's choice for all three categories of materials. Such custom resin trays, allowed to cure for 24 hours before use to minimize polymerization shrinkage, provide optimum, near-equal thicknesses of impression material and minimal chances of distortion. However, in recent years, putty-type preliminary impressions made in stock trays before tooth preparation and lined with a thinner material after tooth

preparation have gained popularity and acceptance. For short-span, fixed prostheses they have excellent accuracy. Such materials are available in either polysulfide or silicone.

For optimum accuracy, it is necessary to leave the impression materials in the mouth for the proper length of time. Polysulfides require the longest time to set; silicones and polysiloxanes are intermediate in setting time; and polyethers set in the least time. An easy clinical test for set is made by indenting a fingernail into the impression material. If it recovers (springs back), the impression may be considered to be ready to remove from the

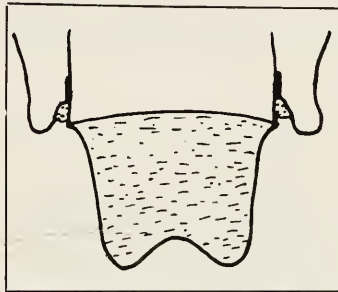


Figure 4. The preparation is now ready for the impression. The second cord has been removed. The first cord remains in place, and the margin is entirely visible and dry.

mouth. If it does not, it should be allowed to remain in place.

Summary

Polysulfide, silicone and polyether "rubber like" impression materials have been described and compared. Polysiloxane has been described. A clinical technic for atraumatic tissue management has been described, and some suggestions about impression making have been made.

GORDON J. CHRISTENSEN, DDS, MSD, PhD., Clinical Research Associates, Doctors' Park, 777 North 500 West, Suite 203, Provo, Utah 84601

Biomaterials Clinical Research, Anterior and Posterior Composites

(Continued from page 36)

concave miniscous (Figures 1, 2, and 3). In either case high resolution photographs demonstrate that the composite resin is intimately adapted to the tooth structure. It is probably for

this reason that no more than two composite resins of the total number evaluated showed evidence of secondary caries. It should be mentioned that none of the cavity preparations in this study were acid etched or treated with primers or enamel bonding agents. Such techniques were not generally used at the time the samples were placed.

Although the marginal integrity of the composite resins observed in this study was quite excellent, a small number of the restorations had isolated voids on the surface. These bubbles, which were probably incorporated into the composite resin during the mixing procedure, become exposed to the surface as the composite resin wears away during service. Those in the center of the occlusal surface generally presented no major problems. Those immediately adjacent to the tooth structure, however, were occasionally deep enough to expose the dentin. Such a situation could predispose the tooth to secondary caries.

In conclusion then, it would appear that the longevity of composite resin restorations in conservative Class III and V cavity preparations may be at least ten years or more. The use of present day composite resins, however, in Class I and II cavity preparations should not be considered.

A discussion of modified cavity preparations for resin restorations as well as finishing techniques for composite resins will be published in the next issue of the NORTH CAROLINA DENTAL JOURNAL.

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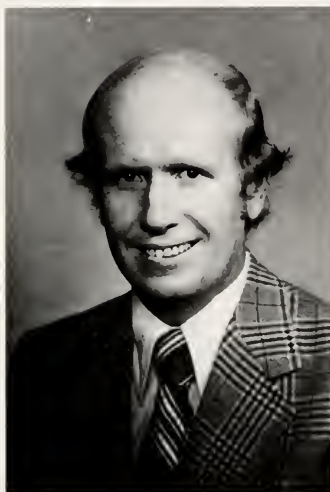
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first district news

William H. Craig, D.D.S., Editor

"Humanistic Dentistry" Topic at 1st District Meet



Dr. Richard Frazer, Austin, Texas



The fall meeting of the First District will again be held at the beautiful Grove Park Inn in Asheville on September 22, 23, and 24.

Our speaker this year will be Dr. Richard Frazer of Austin, Texas who will be speaking on the subject of "Humanistic Dentistry." Dr. Frazer graduated from the University of Texas Dental Branch in Houston. He is President of the Texas Chapter of the American Society for Preventive Dentistry and adjunct professor at the Department of Community Dentistry, The University of Texas Health Science Center at San Antonio and The University of Texas at Austin. While serving as general dentist and chief of periodontal services at McCord AFB Washington, he organized and implemented the basewide programs for patient education and dental disease control. Bob Frazer is an articulate and enthusiastic speaker and author who has given numerous presentations on preventive and humanistic dentistry to local, state and national groups. He is currently in private incorporated practice in Austin, Texas.

Dr. Frazer believes that the years ahead hold unparalleled opportunity to prosper in the practice of high quality, holistic dental care. He will discuss this period, its ramifications, and the choice he and his office have made toward humanistic dentistry and its reliance on developing interdependent relationships.

PROGRAM

Friday, September 22, 1978

Golf Tournament, Grove Park Inn Golf Course
Tennis Competition
3:00- 5:00 p.m.—REGISTRATION — Lobby
6:00- 7:00 p.m.—Wine and Cheese Social Hour
7:00- 8:30 p.m.—Buffet Dinner — Main Dining Room
8:30-10:00 p.m.—Annual Business Meeting

Saturday, September 23, 1978

8:00 a.m. — Breakfast New Members
8:00- 9:00 a.m.—Breakfast — Main Dining Room
9:30 a.m.—Dr. Robert L. Frazer
11:00 a.m.—Coffee Break
11:30 a.m.—Dr. Robert L. Frazer
12:30 p.m.—Lunch
2:00 p.m.—Dr. Robert L. Frazer
3:15 p.m.—Coffee Break
3:45- 5:00 p.m.—Dr. Robert L. Frazer
6:30- 7:30 p.m.—Social Hour in Honor of New Members
7:30 p.m.—Dinner—Ball Room
9:00-12:00 p.m.—Dance

Sunday, September 24, 1978

8:30-10:30 a.m.—Table Clinics
10:30 a.m.—Brunch with the Auxiliary and the installation of new members and officers of the Society. Door Prize Drawing

ADJOURN

For further information, contact Dr. Robert Owen, 2 Doctors Park, Asheville, N.C. 28801.



second district news

James A. Harrell, Jr., Editor

Dr. Omer Reed to Highlight Tar Heel Seminar



—Dr. Omer Reed, Phoenix, Arizona

Saturday and Sunday's education sessions will feature Dr. Reed who will speak on "Complete Dentistry." He will cover much of his philosophy on office efficiency, clinical techniques, preventive aspects and money management. His lectures always provide food for thought and reflection as well as useful ideas to put to immediate use. Dr. Reed will speak from 9 a.m.-5 p.m. on Saturday and 9 a.m.-3:30 p.m. on Sunday.

An informal cocktail party, buffet and bar with music for dancing is slated for Saturday evening.

The Auxiliary has a full schedule of meeting with friends for boutiquing, a fashion show with brunch, a Sunday afternoon tea plus a fabulous poolside party.

Support your district by attending the 1978 Tar Heel Dental Seminar at the Radisson Plaza, Charlotte, site of the 1982 N.C.D.S. Annual meeting.

Dr. Asa Lee reminds everyone to return the continuing education form to him by August 15th. Let's meet the challenge! If you have misplaced the form, list the courses and hours on a sheet of paper and send it in.



—Radisson Plaza Hotel, Charlotte

Dr. Omer Reed, Phoenix, Arizona, will highlight this year's Tar Heel Dental Seminar to be held September 8th, 9th and 10th at Charlotte's new Radisson Plaza Hotel.

The seminar will begin on Friday afternoon with tennis and golf, (Details to be forthcoming), with a welcoming poolside cocktail party to be held at 7:00 p.m. as the first formal activity. Participants will then be invited to enjoy dinner on the town at one of Charlotte's many fine restaurants.



third district news

Kenneth R. Diehl, D.M.D., Editor

Holroyd to Highlight Third District Meet at Myrtle Beach

Dr. Samuel Holroyd will be the featured speaker at the Third District annual Fall meeting to be held Friday through Sunday, September 29 through October 1, 1978, at the Sheraton Hotel, Myrtle Beach, South Carolina.

With a format designed to allow plenty of free time to enjoy the beach and the facilities at Myrtle Beach, the first educational session is scheduled to begin on Friday afternoon and continue Saturday morning instead of the normal full-day on Saturday. And without scheduled dinner banquets, attendees will have the opportunity to sample some of the fine restaurants in the Myrtle Beach area.

Listed below is the complete schedule of events for the District Meeting and a brief outline of the facilities at the Sheraton. Plan now to join us at the Beach!

Schedule of Events

Friday, September 29, 1978

8:00 A.M.

Golf or Tennis

1:30 P.M. — Call to Order
Introduction of Guests

2:00 P.M. - 4:30 P.M.

Dr. Samuel Holroyd — Program

4:30 P.M.-5:00 P.M.

Business Meeting

6:30 P.M.-8:00 P.M.

Cocktails and Hors d'oeuvres

Saturday, September 30, 1978

7:30 A.M.

New Members Breakfast

9:00 A.M.-1:00 P.M.

Dr. Samuel Holroyd — Program

Afternoon

On your own — Enjoy the Beach
6:30 P.M.-8:00 P.M.

Cocktails and Hors d'oeuvres

Sunday, October 1, 1978

9:00 A.M.-11:30 A.M.

Mini Clinics (30 minutes each)

Table Clinics

11:30 A.M.-12:00 P.M.

Business Meeting

Facts About the Sheraton Myrtle Beach Inn

LOCATION: Ocean front at 71st Ave. North in Myrtle Beach. Just off U.S. 17 five minutes from downtown, shopping and amusements. Five to twenty minutes from tennis, fishing and over twenty 18 hole championship golf courses.

GUEST ROOMS: 198 Luxury Guest Rooms, all ocean front including: 94 Deluxe Twins, 91 Efficiencies with Kitchenettes, 11 Executive Parlor Suites and Two Bridal Suites. We also have 48 Tower Rooms included for those who want to stay on top. All Guest rooms include: Private Balconies, Two Double Beds, Individual Climate Control. Color Cable T.V., and the finest tropical decor in the Southeast.

GUEST SERVICES: Free Guest Laundry Room, Free Ice Machines, Vending Areas, Valet Service, Room Service, Babysitting Available, Car Rental Available.



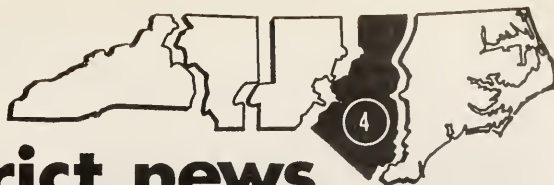
Dr. Samuel Holroyd

DINING AND ENTERTAINMENT:

CAFE DU PORT: Our Oceanfront dining room serving Breakfast, Lunch and Dinner as well as snacks. A full menu with all your favorite dishes. Served in a tropical atmosphere.

BANANA BOAT BAR: Open from midday to late night. Our casual atmosphere, specialty drinks, and friendly service add up to the perfect place to relax between meetings. The poolside and beach front location and our nightly entertainment are enticing extras to the perfect resort lounge.

PINNACLE SUPPER CLUB: Located at Rooftop overlooking Myrtle Beach and the Ocean. Nightly entertainment for dancing and a superb supperclub menu. The top place to have an exciting cocktail or a dramatic dinner.



fourth district news

Ralph O. Hawkins, Jr., Editor

Dental Kinesiology Topic of 4th District Session

Mark your calendar for October 5th and 6th and plan to attend the Fourth District Annual Meeting, to be held at the St. James Inn, Fayetteville. Take advantage of our fine jam-packed program by planning now to be with us.

THURSDAY, OCTOBER 5th

- Golf and Tennis
- 5:00 Registration desk opens
- Hospitality room opens
- 5:30 Executive committee meeting
- 6:30 Cocktail Party with hors-d'oeuvres — FREE
- 8:00 First General Business Session

FRIDAY, OCTOBER 6th

- 8:00 New Members Breakfast with open discussion
- 9:00 Dr. George Eversaul — Dental Kinesiology
- 10:45 Break
- 12:00 Luncheon — Second Business Session
- 1:00 Table Clinics
- 2:00 Dr. George Eversaul
- 3:15 Break
- 5:00 Complete Program

SATURDAY, OCTOBER 7th

- Breakfast
- Executive committee meeting
- Sports for fun continued

Presenting the featured clinical session on Friday, Oct. 6, 9:00 a.m. to 5:00 p.m., will be Dr. George Eversaul, Las Vegas, Nevada. The day-long course, entitled "Dental Kinesiology," will demonstrate the tremendous importance of proper occlusion for optimal systemic health.



George Eversaul, Ph.D., Las Vegas, Nevada

George Eversaul, Ph.D., is a privately funded researcher of Functional and Preventive Medicine, currently investigating and developing clinical applications of nutrition, biofeedback, and dental kinesiology. His research focuses on the treatment and prevention of chronic diseases, with a special interest on the effect of TMJ dysfunctions and dental stress on systemic health and chronic pain.

In recent years, Dr. Eversaul has presented major addresses at the International Academy of Preventive Medicine, the Greater New York Dental Meeting, the American Osteopathic Association, the American Association of Medical Preventives,

and the Academy for the Study of Stress and Chronic Pain. In addition, he presented professional papers to the 1974 and 1975 annual meetings of the Biofeedback Research Society, and has spoken to numerous professional groups and study clubs including several chapters of the American Society of Preventive Dentistry, the American Academy of Cranio-Mandibular Orthopedics, the International Academy of Micro-Endocrinology, and the California Dental Association.

Dr. Eversaul was the guest editor of a special edition of the Journal of the American Society of Preventive Dentistry devoted to dental applications of biofeedback and dental kinesiology. He is the author of a chapter on the applications of dental kinesiology in occlusal therapy in Harold Gelb's "Clinical Management of Head, Neck, and TMJ Pain and Dysfunctions," published by W. B. Saunders. He is also the author of his own text entitled "Dental Kinesiology." In addition, he has had several other professional publications including a major article in Tomorrow's Medicine Today.

Dr. Eversaul also teaches "Psychological Techniques in Crisis" as a part of the State of Nevada's Emergency Medical Technician and Para-Medic programs, and has been a member of the Professional Rescue Instructors of Nevada for over five years. Prior to his involvement in dental/medical research, Dr. Eversaul was a consulting clinical psychologist for the State of Nevada.



fifth district news

Kenneth W. Gibbs, D.M.D., Editor

Canadian Clinician To Speak On "Development of Dental Team" At 5th District Autumn Meet

The Fifth District has enjoyed a good year under the leadership of President Wayne Anderson and his Executive Committee. The Committee is finalizing the Annual Autumn Meeting of the District which should be one of the most enjoyable and informative meetings of recent years.

This year, the Autumn Meeting will be held at the fabulous Myrtle Beach Hilton in Myrtle Beach, South Carolina on Friday, Saturday, and Sunday, September 8th-10th, 1978. Members and wives are encouraged to come early so that they might have an opportunity to enjoy the many recreational and shopping facilities that the Hilton and Myrtle Beach have to offer.

THE FIFTH DISTRICT DENTAL SOCIETY TENTATIVE SCHEDULE OF EVENTS

AUTUMN MEETING, SEPTEMBER 8-10, 1978 MYRTLE BEACH HILTON, MYRTLE BEACH, SOUTH CAROLINA

SEPTEMBER 8th—FRIDAY

10:00 a.m.: Golf and Tennis Tournaments (arranged at Hilton)

3:00-6:00 p.m.: Registration

5:00-7:00 p.m.: First General Sessions. Reports. Election of New Officers. Presentation of New Members. Necrology Service. President's Address for Membership

7:00-8:30 p.m.: Reception Honoring Wives and New Members

SEPTEMBER 9th—SATURDAY

7:30-9:00 a.m.: Breakfast for General Membership honoring New Members and Past Presidents

9:30-12:30 a.m.: Wilson Southam

12:30-2:00 p.m.: Lunch on the Roof of The Hilton

2:00-4:30 p.m.: Wilson Southam

6:00-7:30 p.m.: Cocktail Party for Members and Wives

7:30-9:00 p.m.: Dinner. Continuing Education Awards. Golf and Tennis Tournament Prizes

9:00-1:00 a.m.: Dance with *The Embers*

SEPTEMBER 10th—SUNDAY

9:00-10:00 a.m.: Projected Clinics

10:00-11:00 a.m.: Final General Session. Installation of New Officers. Final Reports. Door Prizes. Adjournment

Our clinician on Saturday will be Wilson Southam, President of the Group at Cox in Quebec Province, Canada. Wilson, as President of Cox Systems, has a personal work goal to become "an effective helping professional to the modern private practice dental team." Mr. Southam was born in Calgary, Alberta in 1932 and was educated at McGill and Oxford. He has been a journalist, Public Affairs Television Writer-Director-Producer with the Canadian Broadcasting Corporation and university lecturer at Carleton University in Ottawa at the School of Journalism.



Wilson Southam, President of Cox Systems, Quebec Province, Canada

During 1966, Wilson began researching the problems of Health Service Delivery. In 1969, he became President of Cox Systems and has lectured widely to groups about Dental Health Services Delivery. Wilson will speak to our District on the development of the dental team — dentists, dental auxiliaries, psychologists, engineers, designers, specialists and a variety of support personnel. His objective of this team is the development of environments responsive to human needs.

This article appears as a result of a letter from Dr. Larry A. Williams, Benson, N.C. and a personal experience he had in his own office one afternoon.

Dr. Williams wrote Dr. Galen W. Quinn, Editor/Publisher of the Journal with the article attached:

"The enclosed article was given to me by a drug enforcement officer because of a recent experience I had in my office.

It seems that several others were 'taken' by a guy that was really 'smooth' and believable. He hit me at a time when I was in the office by myself. My assistants had gone home and I was just ready to leave.

I feel that we all need a reminder of what can happen even to the best of us who are trying to do the best job we can for the public.

May I suggest you obtain permission to print the article in our NCD Journal in hopes that it will be a reminder to be on our toes all the time."

Some doctors are unknowingly contributing to the growing problem of drug abuse in this country.

I say this because I myself was a drug addict, and for several years physicians were my main source of drugs. Like a lot of other addicts I know, I obtained drugs by defrauding doctors. (Addicts call it "making a doctor" — that is, obtaining a drug prescription by fraud.)

I am writing this with the hope that I can give doctors some tips on how to spot an addict from among patients who come in with symptoms calling for drugs that tend to be abused.

At present I am serving a 10-year sentence at the Kirkland Correctional Institution of the South Carolina Dept. of Corrections in Columbia. I was sentenced in April of this year, and I will be eligible for parole after serving three years and four months. Drugs have caused my family and me plenty of heartaches. As a result I have no desire ever to abuse drugs again.

Since I have been such a nuisance to doctors, it is only right that I should try to make up for it. I think the best way I can do this is to list the drugs that addicts try to get from physicians, suggest how to deal with a new patient who is asking for narcotics, and explain some of the approaches and excuses addicts use.

Don't Be Deceived by a Drug Addict

By Larry Abbott

Of all the narcotics, Demerol seems to be one of the most popular and most widely used, especially by the younger addicts. The older abusers tend to favor morphine, Dilaudid, Pantopon, and Percodan. Except for Percodan, these drugs are harder for the less-experienced, younger addicts to obtain.

Addicts also try to get hold of paregoric. One of the most widely used excuses is to complain of diarrhea. Another good one is to claim that your child is cutting teeth and is restless and in pain — "I've tried paregoric before with the child and it worked fine." It is simple to extract the opium from paregoric. One ounce will yield about one-fourth grain of opium.

A drug addict gets to be very good at fooling doctors. One of the oldest and most successful approaches is to pretend you have kidney stones.

If acted out right, this can be very convincing. For example, I would go into a doctor's office complaining of pains in my left side, the pain shooting down into my groin and originating from my back on the left side. I used my left side to avoid having my "ailment" mistaken for appendicitis, which would require hospitalization.

I would also tell the doctor that it burned when I passed water and that I'd had stones before and passed them while at home. If he suggested that I be put in the hospital, I would say that I had just gotten medical insurance in a

group policy, but that the policy wouldn't be effective for about two weeks, and I wanted to try to hang on until then.

When asked for a urine specimen, I would pass just enough water in the cup or vessel. Then I'd stick my fingertip with a needle and drop in enough blood to barely darken the color of the urine. After the doctor had diagnosed my illness as probably due to kidney stones, I'd volunteer the information — if he didn't ask for it — that I am allergic to codeine and Talwin.

Both these drugs will ease the pain of drug withdrawal, but more potent drugs produce a more desirable effect. Since I would say I was allergic to codeine and Talwin, that would leave only a few other drugs a doctor could prescribe to relieve the distress from kidney stones.

If I didn't think the doctor would prescribe one of the strongest drugs (such as morphine or Dilaudid), I'd tell him that on another occasion I'd taken a pain medication that worked fine, one that had a codeine substitute in it (I'd be angling for Percodan). I would either describe what the medication looked like or give him its name.

I rarely went back to the same doctor more than two or three times. I'd still make use of him, however, by getting other addicts or friends to go to him. Then we'd divide the dope. The others would pay all the expenses be-

cause I was furnishing them with a new source. Then they would do the same thing with their friends. So a doctor should watch out for a series of new patients, all complaining of similar illnesses, like kidney stones. Don't let age or appearance fool you. Addicts are of all races, ages, and both sexes. I know of a man that has been abusing drugs since 1914. He still "makes" doctors every day. He lives with a man and a woman who are also addicts. These two are in their fifties. The three of them have been in prison several times for drug-related offenses.

Sometimes you can spot an addict pretty easily. When you are examining a new patient who complains of pain, be on the lookout for the usual signs of drug use — the excessive yawning, sneezing, and nervousness of withdrawal, or the "pinpoint" pupils, the nose that is red from scratching or rubbing, the unusual thirst and sometimes, slurred speech of a person who is "high."

If you can, ask the patient to remove his or her shirt. Then examine the backs of the arms, the shoulders, the forearms, and the wrists for needle marks. Also, directly after taking a specimen of urine, examine the fingers for puncture marks, squeezing each fingertip in turn. Usually, a recent puncture will bleed again. If not, old marks will show. Occasionally, a patient will sneak in a prepared urine specimen in his pocket, but this is the exception.

When you're examining the ankles for the swelling that occurs with kidney stones, look for more needle marks. Many addicts keep a needle — or whatever they use for sticking their finger — in their sock. One time a doctor discovered a needle and syringe in my sock in this way.

Addicts are desperate. They are always thinking of new ways to feed their habit and will do almost anything to get hold of the drugs they need. For this reason, if you find it necessary to give a patient medication for pain, never let him see where you keep the drug. If an addict knows that there are drugs in an office, and has learned where they are, it will be a big temptation for him to break in later. Once that happens, a physician can expect a lot more break-ins, not only by the first person, but by others as well, for drug addicts have a kind of grapevine operating about good sources of supply.

When addicts are together, they're always trading tips on what doctors

they've "made," what a particular doctor prescribed, how "easy" he was, and what drugs they noticed in his office.

Doctor's cars, usually with special insignia, are easy to identify. Some physicians have a bad habit of leaving their bag in plain view on the seat or floorboard of their cars. This can result in loss of the bag, and usually a broken window. An addict who steals a doctor's bag may be encouraged to break into his office. The addict will figure that if there is a small amount of drugs in the bag, there will be a larger quantity somewhere in the office.

A prescription pad left out in the open is another temptation that an addict may find hard to pass up since most can write a prescription as well as a doctor. And when a doctor writes a prescription, he should use both the numerical and written-out form of the amount, so that the patient will find it harder to alter the quantity. For example, if he says "twelve" it will prevent anyone's changing the "12" to "42."

An addict approaches a dentist in the same way as he does a physician, maybe asking for an antibiotic and some pain medicine to tide him over. He'll say he's from out of town (addicts trying to make doctors and dentists tend to be "from out of town") and has an appointment with a dentist in his home town to have some root canal work done, but that isn't until next week, and he forgot to bring with him the medications that the hometown dentist supplied.

The dentist who has been approached will feel better about giving a narcotic because he's been asked for an antibiotic, too. A lot of dentists won't even bother to examine the tooth or to x-ray it in these circumstances.

If an addict really does have an abscessed tooth, he makes full use of it. He goes from dentist to dentist asking for pain medicine and antibiotics, visiting doctor's offices and hospitals as well. Most dentists and physicians will give a narcotic when they see swollen, red gums.

The addict will refuse to have the tooth pulled, explaining that he is saving up to have root canal work done. After he has taken an antibiotic for a few days, the pain and swelling will be gone, but the abscess will still be evident on an x-ray. It can be used to fool dentists indefinitely, or until the addict gets tired of recurring flareups and has the tooth pulled. He won't mind losing

his "gold mine," because he knows he'll get some kind of pain killer after the extraction.

Addicts are forever contracting abscesses of all types and that just provides another excuse to get drugs, going from doctor to doctor. Believe it or not, most addicts try to prevent doctors from healing an abscess until it gets too painful to bear. I have done this myself. (Dentists and physicians seem to respect each other's opinions and if an addict "from out of town" tells a convincing story, some never bother to check it out. They should.)

Addicts live for the present. They don't worry about the future. If they can think of a way to get drugs now, they don't wait until a better time. And they're always looking for a gimmick.

A friend of mine has porphyria of the acute intermittent type. I think it is hard to diagnose and that a physician has to send a urine specimen away somewhere to be analyzed, which takes time. Several of my friends and I myself have gone to doctors, claiming to have the disease.

We would complain of severe pains in the stomach and abdomen and would have no trouble getting a large supply of Demerol. I've been told the disease is terminal, so I guess this is why doctors prescribe such large quantities of the drug. Most doctors seem to use Demerol as the pain medicine of choice for this disease.

There are many more gimmicks drug abusers use, but I hope that this will show you a little about how an addict works and thinks. The point is that a drug addict will take advantage of you as long as you let him. When you discourage a few of them by not falling for their games, you will be known within drug circles as a "doctor who won't write" (prescriptions for pain killers), and so other addicts will leave you alone.

Then, even if you unknowingly write for a drug abuser who has fooled you, he will tell others how hard it was, and that will stop them from bothering you.

I hope this information helps, and I would just like to say again that I'm sorry for all the trouble that I've caused in the past.



"Responsible Action" Theme of '78's NCDHA Annual Session

"Responsible Action" the thirty-first Annual Session of the North Carolina Dental Hygienists' Association was held May 13-16, 1978 at the Mid Pines Country Club, Southern Pines, N.C.

The first order of business was the installation of the 1978-79 Officers of NCDHA by District IV Trustee, Sara Belinky. They are: *President:* Brenda Martin, Charlotte. *President-Elect:* Erma Thomas, Goldsboro. *Vice-President:* Linda Spruill, Cameron. *Treasurer:* Peggy Mackie, Yadkinville. *Recording Secretary:* Nancy St. Onge, Raleigh. *Immediate Past President:* Gail McLean, Durham. *Corresponding Secretary:* Sheila Jones, Charlotte. *Speaker of the House:* Gene Rauch, Mocksville.



Newly elected NCDHA President for 1978-79, Brenda Martin, Charlotte.

Continuing Education

On Saturday, May 13, a Joint Session was held with NCDHA and NCDAA at Mid Pines Country Club. Amee S. Worthington, RDH from UNC School of Dental Hygiene and Dr. Dan Shugars from UNC School of Dentistry gave a 2-hour ADHA accredited course on "Physical Fitness".

On Sunday, May 14, a 3-hour program which qualified for ADHA

CEU's was presented by Dr. Steve Matteson, Dr. Lee Sockwell, and Joyce Jenzano, RDH, all of UNC, on "Health Hazards in Dentistry". They touched on such topics as Radiation, Sterilization and methods to avoid cross contamination.

Four 3-hour accredited round table discussions were held on Monday, May 15, ranging from "Cardiopulmonary Resuscitation" with Barb Cain, and "Current Issues in Dental Hygiene" with Sara Belinky, to a "Legislative-Leadership Workshop" with Janet Stout, or "How to Screen for Oral Cancer" with Dr. George Dudney. Two all day sessions were also presented, "I Have Worth — You Have Worth" with Rose Helms, and "Transactional Analysis" with Donna Woodmansee. All courses qualified for CEU credit.

Community Dental Health Award

Mrs. Gayle Davis, a kindergarten teacher from Goldsboro, was presented the NCDHA Community Dental Health Award. Awarded for outstanding efforts of a group or individual in making a significant contribution to the goals of the statewide Dental Public Health Program, Mrs. Davis was cited for her enthusiasm and interest in the dental health of her kindergarten students.

Social

On the evening of their arrival attendants of the 31st NCDHA Annual Session were treated to a cocktail party at poolside, sponsored by Read's Uniform Center in Winston-Salem.

The Annual NCDHA Dance at the Country Club of North Carolina Sunday evening attracted nearly 400 hygienists, dentists, assistants, and guests.

Outgoing President, Gail H. McLean, was honored at the President's Luncheon at Mid Pines on Monday afternoon. Following the luncheon, gifts for the Officers were presented and a token of thanks was given to Sharon Gartman as she ended her position as Executive Director.



Gail McLean

McLean Appointed Executive Director of NCDHA

Gail Hagaman McLean has been appointed Executive Director of the North Carolina Dental Hygienists' Association by the Executive Board. She assumed this position June 1. An active member of NCDHA for seventeen years, Gail has served two terms as Treasurer, Delegate to ADHA, Vice President, Annual Sessions Chairman, President-Elect, and President. She has been a member of many association committees and was NEWSLETTER Editor for seven years.

Gail is a University of North Carolina graduate with a B.S. degree in Dental Hygiene and a masters degree in Dental Public Health Administration (M.P.H. '69). She was a U.N.C. dental hygiene faculty member for seven years and was the recipient of a Doris Duke Faculty Development Grant for graduate school. She is a member of Sigma Phi Alpha, dental hygiene honor society. She is presently employed parttime in a periodontal practice.

Plan to attend the 1979 Annual Session scheduled for May 12-15, 1979 at Mid Pines Country Club.

North Carolina Dental Assistants Association

President's Report

The dental assistants in each dental office should have received a letter from the State Board of Dental Examiners, concerning the new regulations on the use and registration of nitrous oxide equipment. Please note that all auxiliaries who monitor the equipment must complete a 25 clock hour course and receive certification in CPR.

The Component Presidents will meet in Southern Pines August 5, 1978, at 1:30 to discuss local level issues. This meeting is also planned to promote a better understanding of the NCDAA.

As the Twenty-Eighth program chairperson for the North Carolina Dental Assistants Association's Annual Session, I choose "An Investment in Knowledge" as my theme. As Ben Franklin once said, "An Investment in Knowledge Pays the Best Interest." The opportunity is there; NCDAA makes knowledge available to all dental assistants. You owe it to yourself, your employer and the public, to see that you are educated to better serve all. The reward can be two fold. When your doctor supports your education, to become a better assistant for him, then your worth will increase. The interest from this new knowledge may come in monetary means or it may come in your personal growth. But you owe it to yourself, your employer and the public to be your very best.

As the Twenty-Ninth President of the North Carolina Dental Assistants Association, I ask that you help me to keep an open line of communication. The officers of the NCDAA can always use your support and we are always here to support you. Call on any of us at anytime for any help you may need. Attend the meetings of the NCDAA, the district and the components, and remember

"An Investment In Knowledge Pays the Best Interest"

The Annual Session of the North Carolina Dental Assistants Association was held in Southern Pines May 16-21, 1978. More than 400 members were registered and 200 student mem-

bers were in attendance. One of the highlights of our meeting was the table clinics. Member Ann McKinney received the First Place Award and Rowan Technical Institute the First Place Student Clinic Award. President Carolyn Wood received The Dr. William H. Oliver Achievement Award. Dr. W. D. Strickland, Advisor for the North Carolina Dental Assistants Association, was awarded Honorary Membership. Our congratulations to these and other award winners for their outstanding achievements at the Twenty-Eighth Annual Session.

When you just belong and are not an active part in the organization of an Annual Session for this Association, you don't realize the preparation and total effort involved by those who have preceded you. For those of you who have not accepted the challenge, the doors are always open. For those of you who have, my heartfelt appreciation to you.

Article II of the By-Laws of the North Carolina Dental Assistants Association reads that the object of this Association is to promote the education of the assistant, to improve and sustain the profession of dental assisting, and to contribute to the advancement of the dental profession and the improvement of public health. The policies of this Association also state: "This Association shall subscribe to the principle that continuing education of the dental assistant is essential to proper service to the public and to the dental profession". Because of my personal beliefs on education, and the objects and policies of this association, I intend to follow closely the pending changes occurring in educational requirements for certification. I also feel we should inform the assistants of our continuing education programs to be available this fall.

On August 6, 1978, the North Carolina Dental Assistants Association Past-Presidents Council will sponsor a workshop in Southern Pines. This will be in conjunction with the Board of Directors meeting at the Sheraton Motor Inn. Ann Erlich will speak on



Lynn Postek, newly elected president of NCDAA.

"Avoiding Malpractice".

This fall the NCDAA will have five district meetings across the state. The programs are as follows:

First District will meet in Asheville, Saturday, September 23, 1978, with a program on *Dental Office Management* presented by Thompson Dental Company.

Second District will meet at the Quality Inn, Charlotte, N.C., September 9, 1978. The speaker for this program will be Susie Reading, a member of Dr. Omar Reed's staff in Phoenix, Arizona. Her topic will be *Motivation on Plaque Control*.

Burlington will host the Third District Meeting September 30, 1978. Speaker and topic will be announced later.

Linda Clark has arranged a two-day session on *Cardiopulmonary Resuscitation*, for Fourth District. The meeting will be at the AHEC Building in Raleigh on October 7 and 8, 1978. Cary Rescue Squad will deliver this program for assistants to receive their CPR Certificates.

Fifth District will meet in the AHEC Building in Goldsboro, October 14, 1978. The program will be on *New Medicaid Procedures*.

Registration forms for these meetings will be printed in the Summer Issue of the "Mirror". Remember to pre-register early and participate in as many of these continuing education courses as possible.

(Continued on next page)

Two Receive Awards at Pinehurst N.C.A.G.D. Luncheon



Dr. James W. Bawden

Drs. James W. Bawden and Bennie D. Barker both received distinguished service awards from the North Carolina Academy of General Dentistry at the annual N.C.A.G.D. luncheon in Pinehurst. Prior to this time only one award had been given annually by the North Carolina Academy.

Dr. Bawden was honored primarily for his work in dental education as Dean of the School of Dentistry at The University of North Carolina, and for his successful efforts to begin the most comprehensive preventive dentistry

program in any state in the country.

Dr. Bawden is one of the truly outstanding educators of this half of the twentieth century. His contributions to education and research in dentistry are numerous. He has served on almost every important committee involved with education in American dentistry.

Beyond his current heavy involvement in teaching and patient care programs in Pedodontics, Dr. Bawden is a key investigator in the Dental Research Center at the University of North Carolina.

Dr. Bennie Barker has devoted his career to the improvement of dental health and education. His leadership as a member of the faculty and administration at the U.N.C. School of Dentistry played an important role in the U.N.C. School achieving its national reputation. He was involved broadly in teaching, research, and patient care programs while at U.N.C.

Dr. Barker was a key figure in the development of the Dental Foundation of North Carolina and for a decade, provided the driving force for the accomplishments of the Foundation.

After a distinguished career at the University of North Carolina, Dr. Barker was called to revitalize the dental program and provide dental input to the W. K. Kellogg Foundation. The Kellogg Foundation has long been a supporter of dental health and



Dr. Bennie D. Barker

education in this hemisphere. Important among the Foundation's efforts are projects concerned with the utilization of dental manpower, the epidemiology of dental disease, the utilization of dental services, the proper and effective utilization of dental auxiliaries and the study of peer review mechanisms. The W. K. Kellogg Foundation could not have a more outstanding leader (than Dr. Barker) on its staff.

The North Carolina Academy is extremely proud of these two outstanding members of the dental profession.

North Carolina Dental Assistants Association— Presidents Report

(Continued from page 50)

The dental assistants in North Carolina have the opportunity to receive over 50 clock hours of education through NCDAA sponsored courses, district meetings, and component meetings. With the dental assistant's initiative and the doctor's support, a dental assistant can begin or continue her education through NCDAA.

The ADAA Fourth District will meet in Greenwood, S.C., September 9, 1978. Additional information and registration forms will appear in the *Dental Assistants Journal*.

The delegates and alternate delegates to the American Dental Assistants Association's Annual Session in Newport Beach, California, will meet in Southern Pines for a workshop on October 1, 1978. This workshop will concern issues to come before the delegates at the Annual Session. We want our eleven delegates to be well informed before reaching California. All delegates are required to attend the October workshop.

STUDENTS LEARN NEW WAY TO BRUSH TEETH. "One, two, three, wiggle, jiggle, jiggle."

Mumbo jumbo?

No. This spring the six words helped teach more than 1,000 elementary

school students the proper method of brushing their teeth.

On one, two, three, you brush up and down. On wiggle, jiggle, jiggle, you jiggle (jerking the brush slightly back and forth) parallel to the gumline.

Dental hygienists and other dental professionals call the jingle and its application the Bass technique, named after the dentist who developed it. Kids call it "fun."

The 1,075 children who learned the Bass technique participated in a special field project manned by seniors in the curriculum for dental hygiene in the UNC-CH School of Dentistry.

"At the end of the program, there was a 50 percent reduction in plaque," said Aliss Borgnesser, a graduating dental hygienist.

Minimizing Problems In Making a Complete Lower Impression

(Continued from page 38)

the action of the mylohyoid muscle and its influence on the floor of the mouth. The postmylohyoid eminence which lies immediately behind the mylohyoid region fills the postmylohyoid fossae.

Masseter, retromolar pad, and postmylohyoid area. The last border-molding procedure involves the area influenced by the masseter muscle, the retromolar pad, the pterygomandibular raphe, and the postmylohyoid fossae. It is important to properly extend the postmylohyoid eminence and fill the postmylohyoid fossae.

Heat the distal border of the impression tray (from the buccal distal corner to the lingual distal corner) and the retromolar fossa. Temper the tray and place it in the mouth. Hold the tray with the index fingers during these procedures. Instruct the patient to open wide and close lightly on the dentist's index fingers. Opening the mouth wide, border mold the pterygomandibular raphe and the retromolar pad area. Closing the mouth against the fingers constricts the masseter muscle and medial pterygoid muscle. The masseter muscle is forced against the buccinator muscle and forms an indentation at the distal buccal corner. The medial pterygoid muscle shoves the

superior constrictor muscle forward to help form the distal end of the lingual flange. Perform this procedure several times, removing any excess material.

Border Molding Completed

The compound tray should simulate the final form of the finished denture after the border-molding procedure is completed, and should be retentive when replaced in the patient's mouth. Normal movements such as licking the lip, facial expression, and pressing the tongue cheek-to-cheek should not displace the tray.

Final Impressions

To make the final impression, either relieve the inside of the border-molded compound tray or pour a cast and make a personalized acrylic resin tray.

Relief of the compound impression tray. Relieve the entire inside surface of the tray approximately 1 mm. if the compound tray is used. No relief should be made in the buccal shelf region if this region is going to be the primary stress area, and no relief should be made on the postmylohyoid eminence. After holes are placed in the area of the crest of the ridge, the tray is ready for making a final impression. Place the final impression material in the tray (do not overfill the tray). Place the tray in the mouth and instruct the patient to hold the tongue lightly in the area of the "upper front teeth," which will allow the lingual area to be prop-

erly border molded. Also lightly border mold the labial and buccal flange area. The tray will carry and control the final impression material; overzealous border molding at this time is not necessary.

Personalized acrylic resin tray. Pour a cast in the border-molded compound impression tray if a personalized acrylic resin tray is to be used. Relieve the cast with wax in all areas (1 mm.) with the exception of the buccal shelf and postmylohyoid area. Make an acrylic resin tray over the relieved cast. Place holes over the crest of the ridge in the acrylic resin tray. Place the final impression material in the tray and perform border-molding procedures as described previously.

Completed Final Impressions

The completed final impression will have recorded in minute detail the oral structures available in the mouth for the dentures to rest upon. The outline form of the final impression should be an exact duplicate of the anticipated final denture form. The impression, when placed back into the mouth, should have good retention and stability. The completed impression is then ready for pouring a final cast.

CHARLES W. ELLINGER, DDS, M.Sc., Dept. of Prosthodontics, University of Kentucky College of Dentistry, Lexington, Ky. 40506

NEWS OF DENTISTRY

Auxiliary Seminar Slated

A seminar for dental assistants and hygienists entitled "Prevention: The Latest Concepts in Staff-Patient Relationships" has been set for Saturday, September 9, 1978, 9:00 a.m. to 4:00 p.m., at the Quality Inn, 201 S. McDowell St., Charlotte.

The seminar will feature Ms. Suzie Redding, C.D.A., Control Therapist for Dr. Omer Reed, Phoenix, Arizona.

Sponsored by the North Carolina Society for Preventive Dentistry, the seminar is free of charge.

DENTISTS LEARN LIKELY CARRIERS OF HEPATITIS B INCLUDE YOUNG ADULTS. Joe and Mary love to party, but they may be asking for trouble. Sometimes Mary will share a bottle of beer with someone she doesn't know very well. Often Joe will

share a smoke with as many as 15 persons.

Social habits like these mean that young persons — particularly those from urban areas — may have a higher than average chance of getting hepatitis, a virus that can cause serious liver damage or death.

Recent studies show that viral hepatitis B is spread not only by blood but also by saliva, says microbiologist Dr. James J. Crawford of UNC-CH School of Dentistry.

Crawford is concerned because health professionals, such as dentists, physicians and oral surgeons, who came in close contact with saliva or blood from infected persons are particularly vulnerable to accidental infections.

"Hepatitis B is an occupational hazard for dentists," says Crawford, who is teaching dentists how to avoid contracting hepatitis.

Blood studies, he says, indicate that 14 percent of general dentists, 18 percent of physicians and 20 to 30 percent of oral surgeons have been exposed to hepatitis B. In the general public only about 5 percent have been exposed.

Prevention is Alive and Well and Living in North Carolina

The N.C. Society of Preventive Dentistry had its annual meeting in Greensboro in January with nearly 400 people attending. Dr. Omer Reed and his preventive Assistant Mrs. Suzie Redding gave an excellent program.

The current officers of the Society are:

President: Dr. John Dunn
President Elect: Dr. David Kuhn
Secretary: Dr. Jim Ray
Treasurer: Dr. Ken Gibbs
Editor: Dr. Ron Short

History of Recurrent Sore Throat as an Indication for Tonsillectomy

(Continued from page 18)

fourthly, children's sore-throat complaints may, in the absence of examination, have been attributed to infection incorrectly.

How Predictive Are Documented Histories?

The present report leaves unanswered the question whether documented histories of recurrent throat infection are more predictive than those undocumented. To determine this point, it will be necessary eventually to compare the throat-infection morbidity of subjects not operated on in the clinical trial of tonsillectomy with the morbidity of subjects such as those described in the present report.

Implications for the Clinician

The findings reported here strongly suggest that for the child with an impressive but undocumented history of recurrent episodes of throat infection, any decision favoring tonsillectomy would best be postponed at least until

after a dependable clinical observation of two episodes of throat infection of at least moderate severity. Similar strategies have previously been proposed,^{5,22} but no supporting morbidity data were available. If this practice of watchful waiting were generally adhered to, it seems certain that many children who meet currently recognized criteria for tonsillectomy^{1-3,7-10} would be spared the operation because they would remain essentially and demonstrably well.

Implications for Quality Review

Efforts to monitor and improve the quality of medical and surgical practice rely to a considerable extent on agreed-upon standards. Unfortunately, existing standards regarding indications for tonsillectomy have not been validated. As an acceptable criterion for tonsillectomy, the American Academy of Pediatrics "Pediatric Model Criteria Sets" lists "four or more episodes of tonsillitis with cervical adenitis within [the] preceding year"⁷ — a standard subsequently adopted and advanced by others.^{9,10} It appears likely that this or similar criteria involving a history of recurrent throat infection will increasingly be

applied in reviews of quality of care. Pending demonstration that any such criteria are valid, our findings meanwhile point to the advisability of modifying them to include documentation of history as an integral element.

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PROCEEDINGS

Minutes of Executive Committee

VELVET CLOAK INN
RALEIGH, NORTH CAROLINA
APRIL 7, 1978

The Executive Committee of the North Carolina Dental Society met April 7, 1978, at the Velvet Cloak Inn, Raleigh, North Carolina.

Roll Call: Officers present: Robert B. Litton, President; J. Harry Spillman, President-Elect; Zeno L. Edwards, Vice President; Robert J. Shankle, Secretary-Treasurer; Galen W. Quinn, Editor-Publisher.

Executive Committee members present: D. F. Hord, Chairman; Clarence F. Biddix, Charles A. Reap, Mitchell W. Wallace and Walter S. Linville, Jr. Others present: Harold W. Twisdale and William G. Quarles, NCDPAC. Staff present: Joyce B. Rodgers and Ray Hornak.

Dr. Hord called the meeting to order at 3:10 p.m. and asked Dr. Wallace to give the invocation.

NCDPAC Plans. Dr. Hord called on Dr. Harold Twisdale, Chairman of the North Carolina Dental Political Action Committee, who reported on plans for the immediate future and some long-term plans also. He said his Board would meet April 8 to finalize the list of candidates to be supported during the upcoming primary elections.

Dr. Twisdale then described the increasing complexities of Federal and State election laws and said he would like the Executive Committee to consider leasing a small space in the Central Office for the NCDPAC files and also to permit one of the staff members of the Society to do the clerical work and bookkeeping necessary to keep the PAC affairs in proper order. He said the PAC now has 618 members, a savings account of \$36,516 and \$1,316.66 in operating funds. He explained that the Secretary-Treasurer, Dr. William Quarles, is presently engaged in setting up a ledger system for members of the PAC, which would be ready to turn over to the new employee shortly.

It was agreed by consensus that this work for the PAC cannot be done on NCDS time. After further discussion, Dr. Linville moved that the Executive Committee approve the plan if the following contingencies can be satisfied: (1) that the NCDS attorney says it will not affect the tax status of the Society; (2) securing a written statement from the State Elections Commission that this would not be considered an "in-kind" donation in lieu of "soft money" (operating money) from the Society, since it has been learned that this type donation is now illegal. Dr. Barden seconded and the motion was approved.

In response to a question, Dr. Twisdale said the PAC would expect to pay its new employee on an hourly rate commensurate with the regular salary received from the Society and would pay rental on file space at the same rate per square foot as that paid by the Society.

Cancer Clinics. Dr. Quarles asked approval from the Executive Committee to ask dentists throughout the state to help staff oral cancer detection clinics in conjunction with the regular cancer detection drive. Dr. Spillman moved approval, seconded by Dr. Barden, and the motion was approved.

Special Recognition of Members. Dr. Litton said he had been contacted about some means of recognizing past Secretary-Treasurers before the time a central office was established. After discussion Dr. Shankle moved that an *ad hoc* Honors and Awards Committee can be formed by the *ad hoc* Committee on Restructuring NCDS Committees. Dr. Barden seconded and the motion was approved. It was discussed that the committee may consider giving an award to anyone who has made an outstanding contribution to organized dentistry in the state.

There was discussion about appropriate means of honoring the late Dr. Paul Jones. Dr. Litton moved that a resolution be developed and sent to his family. Dr. Edwards seconded and the motion was approved.

"Appropriated" Funds. Mrs. Rodgers explained that for several years there have been specific sums of money set aside in the Society books to be spent for a certain purpose. For reasons unknown, these funds have not been spent, so the auditor had requested that these funds be returned to the General Fund. (Total amount of approximately \$2,500). Dr. Shankle so moved, seconded by Dr. Barden, and unanimously approved.

Medicaid Liaison Committee Report. Dr. Wallace, Chairman, presented a Position Statement which his committee had developed on dental care under Medicaid. He distributed copies and discussion followed on each point. Dr. Wallace then moved that the Executive Committee approve and recommend to the House of Delegates, this *Position Statement Regarding Medicaid Dental Program* as the official position of the North Carolina Dental Society. Dr. Biddix seconded and approval was unanimous.

Legal-Dental Liaison Committee. Dr. Spillman explained that Dr. Samuel Johnson had written a letter seeking cooperation of the Society with the N.C. Trial Lawyers' Association in mediating disputes between dentists and their patients without necessity of court action. Mr. Johnson had been invited to attend this meeting, but had been detained in court. The letter was accepted for information and it was agreed by consensus that a subcommittee of the

Executive Committee might meet with Mr. Johnson and the Trial Lawyers' Association committee to discuss the subject.

1978 Budget. Dr. Barden said he would like to have more information about the necessity for a deficit budget for 1978. It was brought out that the amount of the deficit — approximately \$8,000 — coincided with the appropriation for the N.C. Dental Placement Service. However, this was made before the decision was made to place the Service in the Central Office, and Mrs. Rodgers said she didn't feel the entire amount would be spent. Other budget considerations were discussed and Dr. Shankle assured the Executive Committee that every effort had been made to pare it down to the bare necessities, considering the demands of the times.

Journal Schedule. Dr. Barden said he felt the discussion at the January meeting left much to be desired as far as arriving at an understanding regarding the cutback in publication of the *Journal* from four to two issues yearly. He asked Dr. Quinn if he had anything further to say. Dr. Quinn said he felt the statement he had made, which was quoted in the minutes of the last meeting, had been misinterpreted. He said he was not consulted in advance and was still not happy about it. Dr. Wallace assured him that the discussion in the Central Office Committee had been directed toward economy of both money and time and that there had been no effort to do anything but try to arrive at a budget which is fair and reasonable for each program it covers. Dr. Shankle read a letter dated December 12 in which he had notified Dr. Quinn that the budget would be discussed at the January meeting of the Executive Committee. Dr. Quinn said he had not understood that to mean that a budget would be presented to the Executive Committee as an accomplished fact without his input. Mrs. Rodgers said she had only the consideration of time to be concerned about and that the duties of Managing Editor, which are shared by herself and Ray Hornak, should be subject to some sort of advance scheduling which could be adhered to so that other projects will not have to be put aside without notice. Dr. Barden said he felt the discussion had cleared the air somewhat.

Since a resolution concerning this subject would be presented to the House of Delegates, the discussion was terminated at this point.

Dr. Litton thanked the Executive Committee for "the best year ever" and announced that the Committee would meet for a few minutes after the House session that evening for assignment to reference committees Saturday morning.

Dr. Wallace announced that his term on the State Health Coordinating Council (SHCC) will expire in July and that the Executive Committee needs to think about its nomination to fill this vacancy.

There being no further business, the meeting was adjourned at 6:15 p.m.

ROBERT J. SHANKLE, D.D.S.
Secretary-Treasurer

PINEHURST, NORTH CAROLINA MAY 17, 1978

The Executive Committee of the North Carolina Dental Society met at the Pinehurst Hotel, Pinehurst, North Carolina, on May 17, 1978. Dr. Hord called the meeting to order at 11:35 a.m. and gave the invocation. He congratulated Dr. Litton upon a most successful year as President and welcomed our new President, Dr. Spillman.

VA Fee Schedule No Longer Negotiable. Dr. Hord read a letter from the director of the Veterans' Administration dental unit, Dr. Nelson D. Large, Salisbury, in which it was stated that the VA can no longer negotiate with the North Carolina Dental Society regarding fees. Dr. Large added that he hoped this would not mean the end of communication between the VA and the Society. The letter was received for information.

Medicaid Task Force Update. Dr. Wallace gave a brief summary of the work of the Medicaid Task Force to date. He said the Task Force will continue to work with Medicaid officials to help establish a list of procedures to be covered and to discuss ranges of fees. He emphasized that the Task Force is working in an advisory capacity only.

Crippled Children's Program. There was a brief discussion about the role the North Carolina Dental Society should play in advising the Crippled Children's Program. Dr. Quinn said he is disturbed because dentistry is not really represented on their committee. He said every problem is considered a medical problem, regardless of its nature, and that most cases are referred to public institutions. As a "rostered" participant in the Crippled Children's Program, Dr. Quinn said he feels this referral practice is not always in the best interest of the patient. He further stated dentistry is not receiving the opportunity to serve in some instances where it is best equipped to serve. Dr. Spillman said he had been asked to meet with Dr. Ray White and Dr. Hyatt of the Crippled Children's Program staff. Dr. Litton said there is also in ex-

istence an NCDS liaison committee which has met with representatives of Crippled Children. Dr. Ken Owen is chairman.

Headquarters Suite at ADA Meeting in Anaheim. Mrs. Rodgers asked for direction as to arrangements for the North Carolina Delegation headquarters during the 1978 meeting of the ADA in Anaheim, California. It was agreed through consensus that the headquarters suite would be used by North Carolina Dental Society members only. Dr. Shankle moved that Mrs. Rodgers be instructed to reserve a two-bedroom/parlor suite at the headquarters hotel. Dr. Bitler seconded and the motion passed unanimously.

"PEP" Workshop in August. Dr. Spillman said he would like to have a "straw" vote on whether to proceed with the PEP training seminar in August which had been discussed earlier in the year. This would involve using graduates of ADA PEP seminars as a critique panel, inviting five members from each District to participate, with NCDS staff serving as staff for the seminar. There was a consensus of agreement that the seminar should be held. The date will be announced later.

NCDPAC Update. Mrs. Rodgers reported that she had conferred with the NCDS attorney as to whether the proposed plans of the Political Action Committee would have any effect on the tax status or otherwise affect the Society. She said Mr. Howison had advised the Society to charge the PAC the same rate of rent for filing and office space as the Society is paying its landlord. Also, that the time spent after hours by the NCDS employee doing PAC work should be reimbursed by the PAC at the same rate she is paid by the Society. He said this would ensure the separation of duties and space completely insofar as money is concerned, and would not have any effect on the Society's tax status or involve the Society in any way in political action. Mrs. Rodgers said she would ask the Chairman of the State Elections Commission to send a written statement outlining the guidelines under which non-profit associations and political action committees must operate.

Old Business. Dr. Shankle expressed his appreciation to Dr. Spillman, Dr. Wallace, Dr. Edwards and Mrs. Rodgers for their support last year in service on the central office committee.

New Business. Dr. Hord announced that in August there will be a small task force on reevaluation of accreditation procedures for auxiliary education which will meet in Chicago. There will be two participants from each Trustee District. He said Dr. John Davis from Alabama and he (Dr. Hord) will represent the Fifth Trustee District.

Appointment of Editor-Publisher. Dr. Hord asked Dr. Quinn to excuse himself so that the Executive Committee could discuss appointment of the Editor-Publisher, which is a function of the Committee under the Bylaws.

Dr. Spillman made a motion for purposes of discussion that Dr. Quinn be reappointed for another year as Editor-Publisher. Dr. Wallace seconded. After discussion Dr. Litton moved that the motion be amended to provide that immediately the President, Chairman of the Executive Committee and Ray Hornak meet with Dr. Quinn to come to an agreement on procedure to be followed in preparing the *Journal* for publication. Dr. Reap seconded. The amendment was adopted unanimously. The amended motion was then unanimously approved.

Next Meeting of the Executive Committee. Dr. Spillman announced the next meeting of the Executive Committee will be June 17-18 at the Sheraton in Winston-Salem.

Adjournment. There being no further business, the meeting was adjourned at 12:55 p.m.

Respectfully submitted,
MITCHELL W. WALLACE, D.D.S.
Secretary-Treasurer

ADDENDUM TO EXECUTIVE COMMITTEE MINUTES MAY 17, 1978

Roll Call: Officers present: J. Harry Spillman, President; Robert J. Shankle, President-Elect; Glenn F. Bitler, Vice President; Mitchell W. Wallace, Secretary-Treasurer; Galen W. Quinn, Editor.

Executive Committee members present: D. F. Hord, Chairman; Clarence F. Biddix, Charles A. Reap, Robert B. Litton.
Staff present: Joyce B. Rodgers and Ray Hornak.

SHERATON MOTOR INN WINSTON-SALEM, N.C. JUNE 17, 1978

The Executive Committee met at the Sheraton Motor Inn, Winston-Salem, North Carolina, June 17, 1978.

Roll Call: Officers present: J. Harry Spillman, President; Robert J. Shankle, President-Elect; Glenn F. Bitler, Vice President; Mitchell W. Wallace, Secretary-Treasurer.

Executive Committee members present: D. F. Hord, Chairman; Clarence F. Biddix, Charles A. Reap, Walter Linville, Robert B. Litton, Norman B. Grantham.

Staff present: Joyce B. Rodgers and Ray Hornak.

Dr. Hord called the meeting to order at 9:32 a.m. and asked Dr. Wallace to give the invocation. Dr. Hord welcomed Dr. Grantham to his first meeting as the new member of the Executive Committee representing the Fourth District.

Dr. Spillman explained that Dr. Quinn was absent due to illness but that he had heard from Dr. Quinn that morning by telephone.

Telephone Credit Cards. Mrs. Rodgers asked for a policy regarding use of the credit cards supplied to the Executive Committee and some committee chairmen. After a general discussion it was agreed that expenses of telephone calls could be lowered if everyone in an official position curtail use of the credit cards as much as possible and dials numbers direct, billing the Central Office each month for long distance calls made on Society business.

Dr. Reap moved that credit cards be used by officers, the Executive Committee and professional staff only when necessary and that committee chairmen be asked to dial direct all possible calls and to bill the Central Office for reimbursement. Dr. Biddix seconded and approval was unanimous.

Proceeds from Scrap Amalgam Drive. Mrs. Rodgers read a letter from the North Carolina Dental Auxiliary asking for direction on disposition of the proceeds of their annual scrap amalgam drive. After discussion Dr. Litton moved that the Executive Committee recommend that they continue to give the money to the Dental Foundation of North Carolina, Inc. on an unrestricted basis. The motion was severally seconded and unanimously approved.

Arrangements for ADA Meeting. Since it had been decided that the decision on sending alternate delegates to Fifth Trustee District caucuses and the ADA meeting should be made on a year-to-year basis, the subject was discussed. Dr. Wallace moved that all alternates and delegates be sent at Society expense to the caucuses and to the ADA meeting in Anaheim. Dr. Bitler seconded and the motion passed unanimously. Since Mrs. Rodgers' commitment as secretary to the Fifth Trustee District will continue through the 1978 meeting, the Committee discussed whether Mr. Hornak should go to help with arrangements for the hospitality suite and other work which Mrs. Rodgers will not have time to do. Dr. Spillman moved that Mr. Hornak go to Anaheim with the Delegation, seconded by Dr. Bitler and unanimously approved.

Dr. Shankle said he would like the Executive Committee to make some rules about reimbursement of delegates and alternates who do not attend the full meeting of the ADA or caucuses. He also said he felt each delegate and alternate should have studied the *Reports* and *Supplement* and be fully knowledgeable about the issues. After lengthy discussion Dr. Shankle moved that the Chairman of the Delegation, in consultation with the President of the North Carolina Dental Society, be authorized to deduct a pro rata share of per diem and transportation reimbursement in the event a delegate or alternate fails to attend all meetings of the ADA annual session and caucuses of the Delegation and the Fifth Trustee District Organization. Dr. Biddix seconded and the motion was unanimously approved.

Dr. Linville then moved that the Executive Committee resolve that unless an ADA delegate or alternate fulfills his total responsibilities, he will not receive reimbursement. Dr. Biddix seconded and the motion was approved unanimously.

The Committee decided that the hospitality suite at headquarters hotel will be open only to North Carolina Dental Society members and their guests during the Anaheim meeting. Headquarters hotel is the Disneyland.

Possible Amendment to Code of Ethics. A copy of California's new Code of Ethics had been provided to every member through the mail. Dr. Linville moved that the Ethics Committee be instructed to consider the new Code of the California Dental Association immediately and bring a preliminary report to the next meeting of the Executive Committee. Dr. Litton seconded and the motion was approved unanimously.

Guidelines for Publication of the Journal. Prior to the meeting each member had received a copy of two sets of guidelines for publication of the NCDS *Journal*. The first copy had been prepared by the Central Office and the second was a slightly revised version of the first. After a comparison of the two sets of guidelines, Dr. Reap moved that the original be approved. Dr. Linville seconded and the motion passed by a vote of 8-2.

ADA Workshop on Dental Care Programs. It was decided that a representative of the Society should attend the workshop on Dental Care Programs to be held September 26-27 at ADA headquarters in Chicago. Dr. Spillman moved that Dr. Linville and a person of his choice, if he deems necessary, be authorized to go. Dr. Wallace seconded and approval was unanimous.

Dr. Spillman moved that all persons going to conferences at the expense of the Society be required to prepare a summary of the meeting to be presented to the Executive Committee. Dr. Wallace seconded and approval was unanimous.

Medicaid Update. Dr. Wallace, Chairman of the Task Force on Medicaid, reported that the dental Medicaid program will be reinstated effective July 1, that \$16 million had been allocated in the state budget for that purpose. He recounted the various ways in which the Task Force had been working — review of the Manual, meetings with legislative and Medicaid officials, etc. He said he hoped it would be possible to work out arrangements for a dental consultant to Medicaid who would be acceptable to everyone.

Pilot Prepaid Health Plan Project. Mrs. Rodgers reported the Legislature has passed a bill (H. 1655) which authorized a pilot HMO in the Raleigh-Durham-Chapel Hill area. Although the bill does not use the term "Health Maintenance Organization," this is essentially what the pilot project would be. State employees, teachers, and private industry and federal employees would be invited to participate in the plan. Thus, in essence, the State of North Carolina would be going into the health care business in competition with private practitioners.

PSRO State Council. Mrs. Rodgers said she had been contacted by the ADA to the effect that there will be an opportunity to place public members on the PSRO Council of North Carolina. Since dentists are not included on the governing bodies of PSROs, they could be considered "public." Mrs. Rodgers was instructed to explore the possibility of placing an oral surgeon on the Council.

Peer Review of Industrial Commission Cases. Mrs. Rodgers reported that Dr. D. W. Seifert had approached her with the possibility of the NCDS Peer Review mechanism handling some of the Industrial Commission's more complex cases. After discussion, Dr. Linville said he felt the Society has an obligation to assist with any cases which involve dentistry when possible. There was no motion but a consensus of agreement.

Draft of NCDS Brochure. Mr. Hornak distributed an outline of a proposed

brochure on aims, goals and services of the North Carolina Dental Society. This was in the way of a progress report to the Executive Committee in response to their instructions to develop such a brochure.

Dr. Hord reported that he plans to attend a meeting on guidelines for dental auxiliary education August 23-25 in Chicago. Dr. Spillman moved that the usual expense allowances be authorized for Dr. Hord, severally seconded and approved.

Dr. Shankle reported that he has a letter from a former president of the Society suggesting several projects, among them the possibility of a feasibility study on purchasing a home for the Society. Mrs. Rodgers was instructed to check on the status of the resolution passed by the House of Delegates in March and report back.

The next meeting of the Executive Committee is tentatively scheduled to be held during the Fourth District meeting in Fayetteville, North Carolina Oct. 6-8, 1978.

There being no further business, the meeting was adjourned at 12:50 p.m.

Respectfully submitted,

MITCHELL W. WALLACE, D.D.S.
Secretary-Treasurer

* * *

OFFICIAL REPORT OF ACTIONS HOUSE OF DELEGATES NORTH CAROLINA DENTAL SOCIETY 122nd Annual Session April 8-9, 1978

ADOPTED

1-1978-H. Resolved, that an ad hoc committee be appointed to study the committee structure of the North Carolina Dental Society in order to conform more closely to the ADA council structure.

REJECTED

2-1978 Resolved, that the Long Range Planning Committee be composed of the five (5) immediate past presidents of the districts and the two (2) immediate past presidents of the North Carolina Dental Society with the senior immediate past president of the Society as chairman, effective with the year beginning May, 1978.

ADOPTED

3-S-1978-H. Resolved, that the House of Delegates instruct the Executive Committee to create a Site Selection Committee charged with developing an indepth study of potential sites for the NCDS Annual Session for the next five years. This study report must be presented at the 1978 Annual Session.

REJECTED

4-1978 Resolved, that the House of Delegates meetings be scheduled as a part of the Annual Session agendas of the North Carolina Dental Society, effective with the 1980 session, if a new site is approved for annual sessions.

ADOPTED

5-1978-H. Resolved, that Article II of the Constitution of the North Carolina Dental Society be amended by substitution to read:

ARTICLE II - OBJECTIVE

The objective of this Society shall be to encourage the improvement of the oral health of the public, to promote the art and science of dentistry and encourage the maintenance of high standards of professional competence and practice, and to represent the interests of the members of the dental profession and the public which it serves.

ADOPTED

6-S-1978-H. Resolved, that Article II, Section 17 of the Bylaws be amended by substitution to read:

Section 17. Long Range Planning Committee. This Committee shall consist of nine members, three of whom shall be the most immediate past presidents of the Society, five of whom shall be appointed at large by the President, one from each district, after consultation with the District President, and one of whom shall be a representative on the administrative level of the UNC School of Dentistry. The chairman shall be the most senior past president in terms of service. Terms of office for at-large members shall be one year. The term of office of the representative from the School of Dentistry shall be two years.

The duties of this committee shall be:

a. To maintain an ongoing study of recent and past developments in the Dental Society and in dentistry, the present status and developments in dentistry and future objectives as pertain to the betterment of the Dental Society and its obligation to the public.

b. To recommend solutions to problems by positive action rather than reaction.

c. To recommend plans for the future in order to achieve the objectives of the Society.

7-1978-H. Resolved, that Article II, Section 7, Bylaws, be amended by substitution to read:

Section 7. Dental Care Programs Committee. This committee shall con-

sist of twelve members, selected in the following manner: Five members representing each District in the Society shall be appointed by the President after consultation with the District Presidents for terms of five years, four years, three years, two years and one year respectively, and thereafter one member shall be appointed annually for a term of five years; seven members at large, two of whom shall be past presidents of the Society, appointed by the President for terms as follows: three members for terms of three years, three members for terms of two years, and one member for a term of one year, thereafter each vacancy occurring to be filled by appointment for a term of three years.

The duties of this committee shall be:

a. To formulate and recommend policies relative to the planning, administration and financing of dental care programs.

b. To study, evaluate, and disseminate information on the planning, administration, and financing of dental care programs.

c. This committee or a subcommittee of this committee composed of its members shall serve as a State Peer Review Committee for dental care programs. Each district shall be represented on the State Peer Review Committee.

8-1978-H. Resolved, that Article II, Section 6, be amended by adding a subsection under duties of the committee:

d. This committee shall review all organizational documents to be sure that responsibility assignments are clear and that appropriate contingency plans can be developed through them.

9-1978-H. Resolved, that Article I, Section 6 of the Bylaws be amended as follows:

In the first paragraph, first line, following the word, "vacant," insert the words, "or the President becomes incapacitated and unable to perform his duties," making the amended paragraph read:

"In the event the office of President becomes vacant or the President becomes incapacitated and unable to perform his duties, the President-Elect shall become President for the unexpired portion of the term, after which he shall serve a full term as President."

In the second paragraph, first line, following the word, "vacant," insert the words, "or both the President and the President-Elect become incapacitated and unable to perform their duties," making the amended paragraph read:

"In the event both the offices of President and President-Elect become vacant or both the President and the President-Elect become incapacitated and unable to perform their duties, the Vice President shall become President for the unexpired portion of the term."

In the third paragraph, first line, insert after the word, "vacant," the words, "or the President-Elect becomes incapacitated and unable to perform his duties," making the amended paragraph read:

"In the event the office of President-Elect becomes vacant or the President-Elect becomes incapacitated and unable to perform his duties, the President for the ensuing year shall be elected at the next annual session of the Society in accordance with Article IX of the Bylaws."

10-1978-H. Resolved, that Article II, Section 16c., Bylaws, be amended by substitution of the word, "or" for the word, "on" in the second line, the amended subsection then to read:

"c. To secure legislative action with the approval of the House of Delegates or approval by the Executive Committee when approval by the House of Delegates is not feasible."

11-1978-H. Resolved, that the following subsections be added to Section 4, Article II, Bylaws:

a. All standing committees shall hold an organizational meeting annually within thirty days following their appointment.

b. All committee meetings shall be held in the Central Office of the North Carolina Dental Society, when possible, in order that a staff person may be available for recording minutes. Announcements of meeting times should go to the President in order that he, or his designate, can be present to afford maximum communication throughout the Dental Society.

c. Should a committee desire to hold meetings outside the Central Office, minutes of the meetings should be taken and copies forwarded to the Executive Director of the Dental Society and the President.

REJECTED

12-1978. Resolved, that a registration fee be charged for the annual meeting as follows:

- a. Members of the Dental Society — \$15
 - b. Non-members (excluding auxiliaries) — \$25
 - c. Auxiliaries — \$5
 - d. Exhibitors and Clinicians — Free
- be it further

Resolved, that this change become effective with the 1978 Annual Session.

POSTPONED INDEFINITELY

13-1978. Resolved, that the House of Delegates recommend to the General Assembly of the North Carolina Dental Society that sites other than Pinehurst be tested on alternate years in order to obtain additional exhibit space and to determine whether young members would attend in greater numbers if the meeting were held at less expensive sites, the first alternate site test to be held in 1980.

ADOPTED

14-S-1978-H. Resolved, that the annual dues for fully privileged active members of the North Carolina Dental Society be increased \$25, effective with the 1979 dues.

15-1978-H. Resolved, that the 1978 Budget for the North Carolina Dental Society be approved.

16-5-1978-H. Resolved, that the President of NCDS designate a committee to review the Dental Practice Act to determine if changes are needed that would accommodate innovations of benefit to the public.

17-1978-H. Resolved, that the Dental Health Committee continue its present trend and have a similar meeting next year with the same organizations represented. Others to be included in the meeting should be representatives of the Legislative Committee of NCDS and the five district dental societies.

18-1978-H. Resolved, that this Statement of Policy is the official position of the North Carolina Dental Society for the year April 1978 to April 1979, unless otherwise changed by the appropriate authority.

19-1978-H. Resolved, that the President of the North Carolina Dental Society direct the Constitution and Bylaws Committee to study the feasibility of establishing a system whereby each District would be assured of representation on the ADA Delegation.

20-1978-H. Resolved, that the legislative reception be a bi-annual affair, and that the North Carolina Dental Society budget appropriate funds in the 1979 budget to host a Legislative Reception during the early portion of the 1979 Regular Session of the General Assembly.

21-1978-H. Resolved, that Article I, Section 5 of the Bylaws be amended by addition of Items A through H under the heading "General Responsibilities" and Items A through G under the heading "Duties," hereinbefore listed under the title, "Editor-Publisher."

22-1978-H. Resolved, that Article XV, Section 2, Bylaws, be amended by substitution of Item 5 to read as follows:

"(5) to act as Managing Editor of the NORTH CAROLINA DENTAL JOURNAL and to supervise the editing, publishing and business management of all the publications of the Society."

23-1978-H. Resolved, that a new Article XVI of the Bylaws, be adopted, entitled "Managing Editor," and encompassing Items A through E under "General Responsibilities," and Items A through D under "Duties" as hereinbefore listed, and be it further

Resolved, that succeeding Articles be renumbered accordingly.

24-1978-H. Resolved, that the Editorial Policy as hereinbefore shown become a part of the general policy of the North Carolina Dental Society.

25-1978-H. Resolved, that each AHEC Dental Advisory Committee be requested to make every effort to elect their new Chairman just prior to the NCDS Annual Session, and to file the roster of that Committee with the Central Office in Raleigh at the earliest possible date.

26-1978-H. Resolved, that the membership on the AHEC Dental Advisory Committee be truly representative of the dental community of that region.

27-1978-H. Resolved, that the Chairman of each AHEC Dental Advisory Committee be requested to submit a quarterly report to the Journal and/or the Newsletter concerning the dental activities within his region.

28-1978-H. Resolved, that the name of the Study Committee on Illegal Dentistry be changed to Committee on Illegal Dentistry.

29-5-1978-H. Resolved, that the Executive Committee of the North Carolina Dental Society authorize any necessary steps for combatting illegal dentistry in North Carolina and be it further

Resolved, that the President of the North Carolina Dental Society appoint an ad hoc committee to determine unmet denture needs, to study and make recommendations to the Executive Committee on a Denture Referral Service, and to initiate a Spokesman Training Seminar using graduates of ADA PEP Program seminars and Central Office Staff to train local and district leaders to speak out for dentistry.

POSTPONED INDEFINITELY

30-1978. Resolved, that the North Carolina Dental Society disapprove of action taken to reapportion subsidies to out-of-state dental schools by the North Carolina Advisory Committee on dentistry, and suggest to the Committee that the subsidies to Emory University and Meharry University remain as they are now until they can be phased entirely out of existence.

ADOPTED

31-1978-H. Resolved, that the North Carolina Dental Society House of Delegates adopt a suitable resolution in memory of Dr. Paul Jones and instruct the Central Office to send a copy of said resolution to his family.

32-1978-H. Resolved, that the House of Delegates of the North Carolina Dental Society adopt the proposed Position Statement Regarding the Medicaid Dental Program as official policy.

33-1978-H. Resolved, the House of Delegates instruct the Executive Director's office to prepare and send a suitable letter of appreciation to Dr. Glenn Bitler.

REJECTED

34-1978. Resolved, that the NORTH CAROLINA DENTAL JOURNAL be published four times a year.

ADOPTED

35-1978-H. Resolved, that Article VIII, Section 1 of the Constitution be amended by adding the following words immediately following "delegates from each of the five districts," and the Chairman of the Student Delegation to the North Carolina Dental Society, who is a student member of the North Carolina Dental Society, with the following becoming the amended Article VIII, Section 1:

The House of Delegates shall consist of the President, President-Elect, Vice President, Secretary-Treasurer, delegates from each of the five districts, and the Chairman of the Student Delegation to the North Carolina Dental Society as provided for in Article II, Section 5 of the Bylaws, the elected members of the Executive Committee, the

Chairman of the Ethics Committee and the elected delegates to the American Dental Association, and be it further

Resolved, that the following be added to Article III, Section 5 of the Bylaws following the word "society": "In addition, the Chairman of the Student Delegation to the North Carolina Dental Society shall have full voting privileges."

The amended Article III, Section 5 shall read as follows:

Each district society shall elect five delegates to the House of Delegates of the North Carolina Dental Society. In addition the Chairman of the Student Delegation to the North Carolina Dental Society shall have full voting privileges, and be it further

Resolved, that Article V, Section 4 of the Bylaws be amended by deleting the words "or privileged to vote" immediately following "but they shall not be eligible for office" and adding the words "The Chairman of the Student Delegation to the North Carolina Dental Society shall have the privilege of one (1) vote in the House of Delegates and the General Session," with the following becoming Article V, Section 4:

Student members shall receive annually the NORTH CAROLINA DENTAL JOURNAL, the price of which shall be included in their dues. They shall be entitled to attend all meetings of the Society, but they shall not be eligible for office. The Chairman of the Student Delegation to the North Carolina Dental Society shall have the privilege of one (1) vote in the House of Delegates and the General Session.

36-1978-H. Resolved, that the N.C. Dental Society is concerned about the dental health of the indigent people of this state and offers our full cooperation to the Department of Human Resources in solving this problem.

37-1978-H. Resolved, that this House go on record as supporting the Dental Manpower Study, to continue to support it until its completion, pushing for an early completion and giving its full endorsement to the Manpower Placement Concept.

38-1978-H. Resolved, that the House reaffirm its stand encouraging the members of the NCDS to stay abreast of the issues of the day and to attend their district and state meetings.

39-1978-H. Resolved, that this House mandate the Secretary-Treasurer for 1978-79 to do an in-depth feasibility study on the expense of owning an office as compared to leasing — this report should be presented to the 1979 House of Delegates.

40-1978-H. Resolved, that this House of Delegates encourage all dentists in the state to cooperate in emergency situations, whether it be in the hospital emergency room or with another dentist's patient.

41-1978-H. Resolved, that the North Carolina Dental Society urges the dental component of County Health Departments to keep preventive dentistry as their main objective and leave primary dental care to be provided by the private delivery system.

42-1978-H. Resolved, that the 1978 House of Delegates of the NCDS support President William Friday of the Greater University of North Carolina in his current deliberations with federal agencies, and be it further

Resolved, that we support the control and direction of the University System by the Trustees as they feel best suits the needs of the people of the State of North Carolina.

43-1978-H. Resolved, that the 1978 House of Delegates of the NCDS commend Joyce Rodgers on her election as President of the Constituent Society Officers' Conference of the ADA.

44-1978-H. Resolved, that the House of Delegates direct the Manpower Study Committee and the Executive Committee to explore with the American Dental Association and the University of Minnesota the possibility of one of the ADA Regional Manpower Placement Programs being located in North Carolina under the sponsorship of the North Carolina Dental Society.

45-1978-H. Resolved, that the North Carolina Dental Society urge the Department of Public Instruction to initiate the necessary steps to eliminate all sweetened snack foods sold in lunch rooms in the primary and secondary public schools in North Carolina, and be it further

Resolved, that the North Carolina Dental Society recommend to the N.C. Department of Public Instruction that the operation of concession stands and vending machines in schools for the purpose of selling confections and soft drinks to students be prohibited during school hours.

Editorial — Are Dentofacial Deformities a Preventable Disease?

(Continued from page 6)

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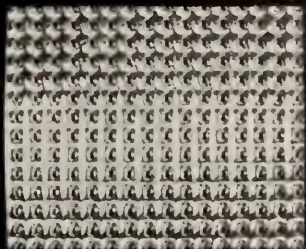
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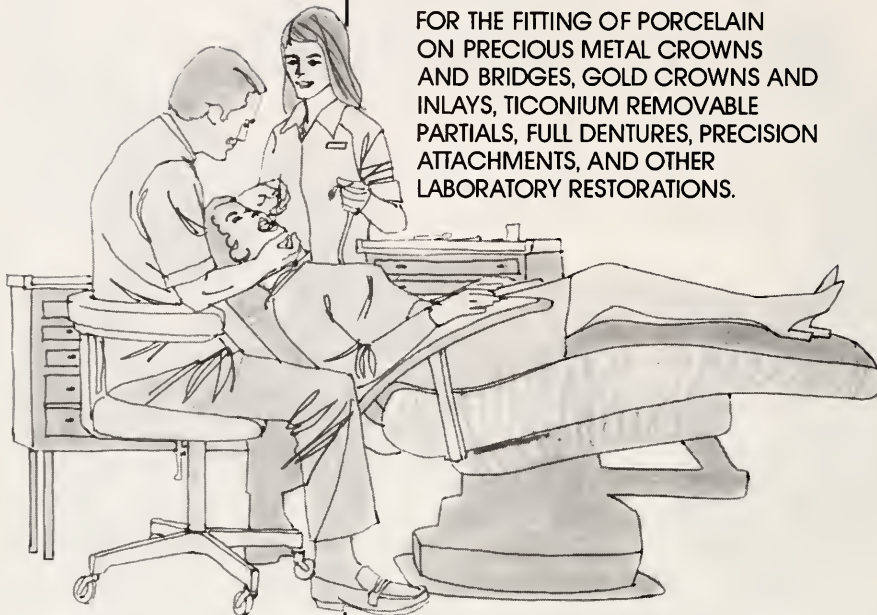
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